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tgc gtg gat gca act aga gag aca aat cgc cta gga aga ctg atc aat        777
Cys Val Asp Ala Thr Arg Glu Thr Asn Arg Leu Gly Arg Leu Ile Asn
226             231             236             ,       241

cac agc aaa tgt ggg aac tgc caa acc aaa ctg cac gac atc gac ggc        825
His Ser Lys Cys Gly Asn Cys Gln Thr Lys Leu His Asp Ile Asp Gly
242             247             252             257

gta cct cac ctc atc ctc atc gcc tcc cga gac atc gcg gct ggg gag        873
Val Pro His Leu Ile Leu Ile Ala Ser Arg Asp Ile Ala Ala Gly Glu
258             263             268             273

gag ctc ctg tat gac tat ggg gac cgc agc aag gct tcc att gaa gcc       921
Glu Leu Leu Tyr Asp Tyr Gly Asp Arg Ser Lys Ala Ser Ile Glu Ala
274         .   279             284             289

cac ccg tgg ctg aag cat taa cc ggtgggcccc gtgccctccc cgccccactt        974
His Pro Trp Leu Lys His  *
290             295

tcccttcttc aaaggacaaa gtgccctcaa agggaattga attttttttt tacacactta      1034

atcttagcgg attacttcag atgtttttaa aaagtatatt aagatgcctt ttcactgtag      1094

tatttaaata tctgttacag gtttccaagg tggacttgaa cagatggcct tatattacca      1154

aaactttat attctagttg tttttgtact tttttgcat acaagccgaa cgttgtgct         1214

tcccgtgcat gcagtcaaag actcagcaca ggttttagag gaaatagtca aacatgaact      1274

aggaagccag gtgagtctcc tttctccagt ggaagagccg ggaccttccc cctgcacccc      1334

cgacatccag gacgggggtg tgaggaagac gctgcctccc aatggcctgg acgggatgtt      1394

tccaagctct tgttccccta acgtctcaac aggcgctcac tgaagtgtat gaatattttt      1454

taaaaaggtt tttgcagtaa gctagtcttc ccctctgctt tctcgaaagc ttactgagcc      1514

ctgggcccca agcacgggcc gggcatagat ttcctcttcc acaagctgcc gcttttctgg      1574

gcaccttgaa gcatcagggc gtgaaatcaa actagatgtg ggcagggaga gtgttgctta      1634

cctgccctgc tggggcaggg tttcctgaaa ctgggttaat tctttataga aatgtgaaca      1694

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a                                                                      1755


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aatcattgaa gttataaatc tttgga atg agc aaa ctc aga atg gtg cta ctt   113
                              Met Ser Lys Leu Arg Met Val Leu Leu
                               1   5

gaa gac tct gga tct gct gac ttc aga aga cat ttt gtc aac ttg agt   161
Glu Asp Ser Gly Ser Ala Asp Phe Arg Arg His Phe Val Asn Leu Ser
 10   15   20   .   25

ccc ttc acc att act gtg gtc tta ctt ctc agt gcc tgt ttt gtc acc   209
Pro Phe Thr Ile Thr Val Val Leu Leu Leu Ser Ala Cys Phe Val Thr
 26   31   36   41

agt tct ctt gga gga aca gac aag gag ctg agg cta gtg gat ggt gaa   257
Ser Ser Leu Gly Gly Thr Asp Lys Glu Leu Arg Leu Val Asp Gly Glu
 42   47   52   57

aac aag tgt agc ggg aga gtg gaa gtg aaa gtc cag gag gag tgg gga   305
Asn Lys Cys Ser Gly Arg Val Glu Val Lys Val Gln Glu Glu Trp Gly
 58   63   68   73

acg gtg tgt aat aat ggc tgg agc atg gaa gcg gtc tct gtg att tgt   353
Thr Val Cys Asn Asn Gly Trp Ser Met Glu Ala Val Ser Val Ile Cys
 74   79   84   89

aac cag ctg gga tgt cca act gct atc aaa gcc cct gga tgg gct aat   401
Asn Gln Leu Gly Cys Pro Thr Ala Ile Lys Ala Pro Gly Trp Ala Asn
 90   95   100   105

tcc agt gca ggt tct gga cgc att tgg atg gat cat gtt tct tgt cgt   449
Ser Ser Ala Gly Ser Gly Arg Ile Trp Met Asp His Val Ser Cys Arg
 106   111   116   121

ggg aat gag tca gct ctt tgg gat tgc aaa cat gat gga tgg gga aag   497
Gly Asn Glu Ser Ala Leu Trp Asp Cys Lys His Asp Gly Trp Gly Lys
 122   127   132   137

cat agt aac tgt act cac caa caa gat gct gga gtg acc tgc tca gat   545
His Ser Asn Cys Thr His Gln Gln Asp Ala Gly Val Thr Cys Ser Asp
 138   143   148   153

gga tcc aat ttg gaa atg agg ctg acg cgt gga ggg aat atg tgt tct   593
Gly Ser Asn Leu Glu Met Arg Leu Thr Arg Gly Gly Asn Met Cys Ser
 154   159   164   169

gga aga ata gag atc aaa ttc caa gga cgg tgg gga aca gtg tgt gat   641
Gly Arg Ile Glu Ile Lys Phe Gln Gly Arg Trp Gly Thr Val Cys Asp
 170   175   /   180   185

gat aac ttc aac ata gat cat gca tct gtc att tgt aga caa ctt gaa   689
Asp Asn Phe Asn Ile Asp His Ala Ser Val Ile Cys Arg Gln Leu Glu

1801

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      186                   191                   196                   201

tgt gga agt gct gtc agt ttc tct ggt tca tct aat ttt gga gaa ggc        737
Cys Gly Ser Ala Val Ser Phe Ser Gly Ser Ser Asn Phe Gly Glu Gly
202                 207                 212                 217

tct gga cca atc tgg ttt gat gat ctt ata tgc aac gga aat gag tca        785
Ser Gly Pro Ile Trp Phe Asp Asp Leu Ile Cys Asn Gly Asn Glu Ser
218                 223                 228                 233

gct ctc tgg aac tgc aaa cat caa gga tgg gga aag cat aac tgt gat        833
Ala Leu Trp Asn Cys Lys His Gln Gly Trp Gly Lys His Asn Cys Asp
234                 239                 244                 249

cat gct gag gat gct gga gtg att tgc tca aag gga gca gat ctg agc        881
His Ala Glu Asp Ala Gly Val Ile Cys Ser Lys Gly Ala Asp Leu Ser
250                 255                 260                 265

ctg aga ctg gta gat gga gtc act gaa tgt tca gga aga tta gaa gtg        929
Leu Arg Leu Val Asp Gly Val Thr Glu Cys Ser Gly Arg Leu Glu Val
266                 271                 276                 281

aga ttc caa gga gaa tgg ggg aca ata tgt gat gac ggc tgg gac agt        977
Arg Phe Gln Gly Glu Trp Gly Thr Ile Cys Asp Asp Gly Trp Asp Ser
282                 287                 292                 297

tac gat gct gct gtg gca tgc aag caa ctg gga tgt cca act gcc gtc       1025
Tyr Asp Ala Ala Val Ala Cys Lys Gln Leu Gly Cys Pro Thr Ala Val
298                 303                 308                 313

aca gcc att ggt cga gtt aac gcc agt aag gga ttt gga cac atc tgg       1073
Thr Ala Ile Gly Arg Val Asn Ala Ser Lys Gly Phe Gly His Ile Trp
314                 319                 324                 329

ctt gac agc gtt tct tgc cag gga cat gaa cct gct gtc tgg caa tgt       1121
Leu Asp Ser Val Ser Cys Gln Gly His Glu Pro Ala Val Trp Gln Cys
330                 335                 340                 345

aaa cac cat gaa tgg gga aag cat tat tgc aat cac aat gaa gat gct       1169
Lys His His Glu Trp Gly Lys His Tyr Cys Asn His Asn Glu Asp Ala
346                 351                 356                 361

ggc gtg aca tgt tct gat gga tca gat ctg gag cta aga ctt aga ggt       1217
Gly Val Thr Cys Ser Asp Gly Ser Asp Leu Glu Leu Arg Leu Arg Gly
362                 367                 372                 377

gga ggc agc cgc tgt gct ggg aca gtt gag gtg gag att cag aga ctg       1265
Gly Gly Ser Arg Cys Ala Gly Thr Val Glu Val Glu Ile Gln Arg Leu
378                 383                 388                 393

tta ggg aag gtg tgt gac aga ggc tgg gga ctg aaa gaa gct gat gtg       1313
Leu Gly Lys Val Cys Asp Arg Gly Trp Gly Leu Lys Glu Ala Asp Val
394                 399                 404                 409

gtt tgc agg cag ctg gga tgt gga tct gca ctc aaa aca tct tat caa       1361
Val Cys Arg Gln Leu Gly Cys Gly Ser Ala Leu Lys Thr Ser Tyr Gln
410                 415                 420                 425
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gtg tac tcc aaa atc cag gca aca aac aca tgg ctg ttt cta agt agc        1409
Val Tyr Ser Lys Ile Gln Ala Thr Asn Thr Trp Leu Phe Leu Ser Ser
426             431             436                     441

tgt aac gga aat gaa act tct ctt tgg gac tgc aag aac tgg caa tgg        1457
Cys Asn Gly Asn Glu Thr Ser Leu Trp Asp Cys Lys Asn Trp Gln Trp
442             447             452                     457

ggt gga ctt acc tgt gat cac tat gaa gaa gcc aaa att acc tgc tca        1505
Gly Gly Leu Thr Cys Asp His Tyr Glu Glu Ala Lys Ile Thr Cys Ser
458             463             468                     473

gcc cac agg gaa ccc aga ctg gtt gga ggg gac att ccc tgt tct gga        1553
Ala His Arg Glu Pro Arg Leu Val Gly Gly Asp Ile Pro Cys Ser Gly
474             479             484                     489

cgt gtt gaa gtg aag cat ggt gac acg tgg ggc tcc atc tgt gat tcg        1601
Arg Val Glu Val Lys His Gly Asp Thr Trp Gly Ser Ile Cys Asp Ser
490             495             500                     505

gac ttc tct ctg gaa gct gcc agc gtt cta tgc agg gaa tta cag tgt        1649
Asp Phe Ser Leu Glu Ala Ala Ser Val Leu Cys Arg Glu Leu Gln Cys
506             511             516                     521

ggc aca gtt gtc tct atc ctg ggg gga gct cac ttt gga gag gga aat        1697
Gly Thr Val Val Ser Ile Leu Gly Gly Ala His Phe Gly Glu Gly Asn
522             527             532                     537

gga cag atc tgg gct gaa gaa ttc cag tgt gag gga cat gag tcc cat        1745
Gly Gln Ile Trp Ala Glu Glu Phe Gln Cys Glu Gly His Glu Ser His
538             543             548                     553

ctt tca ctc tgc cca gta gca ccc cgc cca gaa gga act tgt agc cac        1793
Leu Ser Leu Cys Pro Val Ala Pro Arg Pro Glu Gly Thr Cys Ser His
554             559             564                     569

agc agg gat gtt gga gta gtc tgc tca aga tac aca gaa att cgc ttg        1841
Ser Arg Asp Val Gly Val Val Cys Ser Arg Tyr Thr Glu Ile Arg Leu
570             575             580                     585

gtg aat ggc aag acc ccg tgt gag ggc aga gtg gag ctc aaa acg ctt        1889
Val Asn Gly Lys Thr Pro Cys Glu Gly Arg Val Glu Leu Lys Thr Leu
586             591             596                     601

ggt gcc tgg gga tcc ctc tgt aac tct cac tgg gac ata gaa gat gcc        1937
Gly Ala Trp Gly Ser Leu Cys Asn Ser His Trp Asp Ile Glu Asp Ala
602             607             612                     617

cat gtt ctt tgc cag cag ctt aaa tgt gga gtt gcc ctt tct acc cca        1985
His Val Leu Cys Gln Gln Leu Lys Cys Gly Val Ala Leu Ser Thr Pro
618             623             628                     633

gga gga gca cgt ttt gga aaa gga aat ggt cag atc tgg agg cat atg        2033
Gly Gly Ala Arg Phe Gly Lys Gly Asn Gly Gln Ile Trp Arg His Met
634             639             644                     649
```

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ttt cac tgc act ggg act gag cag cac atg gga gat tgt cct gta act      2081
Phe His Cys Thr Gly Thr Glu Gln His Met Gly Asp Cys Pro Val Thr
650             655             660             665

gct cta ggt gct tca tta tgt cct tca gag caa gtg gcc tct gta atc      2129
Ala Leu Gly Ala Ser Leu Cys Pro Ser Glu Gln Val Ala Ser Val Ile
666             671             676             681

tgc tca gga aac cag tcc caa aca ctg tcc tcg tgc aat tca tcg tct      2177
Cys Ser Gly Asn Gln Ser Gln Thr Leu Ser Ser Cys Asn Ser Ser Ser
682             687             692             697

ttg ggc cca aca agg cct acc att cca gaa gaa agt gct gtg gcc tgc      2225
Leu Gly Pro Thr Arg Pro Thr Ile Pro Glu Glu Ser Ala Val Ala Cys
698             703             708             713

ata gag agt ggt caa ctt cgc ctg gta aat gga gga ggt cgc tgt gct      2273
Ile Glu Ser Gly Gln Leu Arg Leu Val Asn Gly Gly Gly Arg Cys Ala
714             719             724             729

ggg aga gta gag atc tat cat gag ggc tcc tgg ggc acc atc tgt gat      2321
Gly Arg Val Glu Ile Tyr His Glu Gly Ser Trp Gly Thr Ile Cys Asp
730             735             740             745

gac agc tgg gac ctg agt gat gcc cac gtg gtt tgc aga cag ctg ggc      2369
Asp Ser Trp Asp Leu Ser Asp Ala His Val Val Cys Arg Gln Leu Gly
746             751             756             761

tgt gga gag gcc att aat gcc act ggt tct gct cat ttt ggg gaa gga      2417
Cys Gly Glu Ala Ile Asn Ala Thr Gly Ser Ala His Phe Gly Glu Gly
762             767             772             777

aca ggg ccc atc tgg ctg gat gag atg aaa tgc aat gga aaa gaa tcc      2465
Thr Gly Pro Ile Trp Leu Asp Glu Met Lys Cys Asn Gly Lys Glu Ser
778             783             788             793

cgc att tgg cag tgc cat tca cac ggc tgg ggg cag caa aat tgc agg      2513
Arg Ile Trp Gln Cys His Ser His Gly Trp Gly Gln Gln Asn Cys Arg
794             799             804             809

cac aag gag gat gcg gga gtt atc tgc tca gaa ttc atg tct ctg aga      2561
His Lys Glu Asp Ala Gly Val Ile Cys Ser Glu Phe Met Ser Leu Arg
810             815             820             825

ctg acc agt gaa gcc agc aga gag gcc tgt gca ggg cgt ctg gaa gtt      2609
Leu Thr Ser Glu Ala Ser Arg Glu Ala Cys Ala Gly Arg Leu Glu Val
826             831             836             841

ttt tac aat gga gct tgg ggc act gtt ggc aag agt agc atg tct gaa      2657
Phe Tyr Asn Gly Ala Trp Gly Thr Val Gly Lys Ser Ser Met Ser Glu
842             847             852             857

acc act gtg ggt gtg gtg tgc agg cag ctg ggc tgt gca gac aaa ggg      2705
Thr Thr Val Gly Val Val Cys Arg Gln Leu Gly Cys Ala Asp Lys Gly
858             863             868             873

aaa atc aac cct gca tct tta gac aag gcc atg tcc att ccc atg tgg      2753
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1804

```
Lys Ile Asn Pro Ala Ser Leu Asp Lys Ala Met Ser Ile Pro Met Trp
874              879              884              889

gtg gac aat gtt cag tgt cca aaa gga cct gac acg ctg tgg cag tgc      2801
Val Asp Asn Val Gln Cys Pro Lys Gly Pro Asp Thr Leu Trp Gln Cys
890              895              900              905

cca tca tct cca tgg gag aag aga ctg gcc agc ccc tcg gag gag acc      2849
Pro Ser Ser Pro Trp Glu Lys Arg Leu Ala Ser Pro Ser Glu Glu Thr
906              911              916              921

tgg atc aca tgt gac aac aag ata aga ctt cag gaa gga ccc act tcc      2897
Trp Ile Thr Cys Asp Asn Lys Ile Arg Leu Gln Glu Gly Pro Thr Ser
922              927              932              937

tgt tct gga cgt gtg gag atc tgg cat gga ggt tcc tgg ggg aca gtg      2945
Cys Ser Gly Arg Val Glu Ile Trp His Gly Gly Ser Trp Gly Thr Val
938              943              948              953

tgt gat gac tct tgg gac ttg gac gat gct cag gtg gtg tgt caa caa      2993
Cys Asp Asp Ser Trp Asp Leu Asp Asp Ala Gln Val Val Cys Gln Gln
954              959              964              969

ctt ggc tgt ggt cca gct ttg aaa gca ttc aaa gaa gca gag ttt ggt      3041
Leu Gly Cys Gly Pro Ala Leu Lys Ala Phe Lys Glu Ala Glu Phe Gly
970              975              980              985

cag ggg act gga ccg ata tgg ctc aat gaa gtg aag tgc aaa ggg aat      3089
Gln Gly Thr Gly Pro Ile Trp Leu Asn Glu Val Lys Cys Lys Gly Asn
986              991              996              1001

gag tct tcc ttg tgg gat tgt cct gcc aga cgc tgg ggc cat agt gag      3137
Glu Ser Ser Leu Trp Asp Cys Pro Ala Arg Arg Trp Gly His Ser Glu
1002             1007             1012             1017

tgt ggg cac aag gaa gac gct gca gtg aat tgc aca gat att tca gtg      3185
Cys Gly His Lys Glu Asp Ala Ala Val Asn Cys Thr Asp Ile Ser Val
1018             1023             1028             1033

cag aaa acc cca caa aaa gcc aca aca ggt cgc tca tcc cgt cag tca      3233
Gln Lys Thr Pro Gln Lys Ala Thr Thr Gly Arg Ser Ser Arg Gln Ser
1034             1039             1044             1049

tcc ttt att gca gtc ggg atc ctt ggg gtt gtt ctg ttg gcc att ttc      3281
Ser Phe Ile Ala Val Gly Ile Leu Gly Val Val Leu Leu Ala Ile Phe
1050             1055             1060             1065

gtc gca tta ttc ttc ttg act aaa aag cga aga cag aga cag cgg ctt      3329
Val Ala Leu Phe Phe Leu Thr Lys Lys Arg Arg Gln Arg Gln Arg Leu
1066             1071             1076             1081

gca gtt tcc tca aga gga gag aac tta gtc cac caa att caa tac cgg      3377
Ala Val Ser Ser Ser Arg Gly Glu Asn Leu Val His Gln Ile Gln Tyr Arg
1082             1087             1092             1097

gag atg aat tct tgc ctg aat gca gat gat ctg gac cta atg aat tcc      3425
Glu Met Asn Ser Cys Leu Asn Ala Asp Asp Leu Asp Leu Met Asn Ser
```

1805

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     tca gga ggc cat tct gag cca cac tga aaagg aaaatgggaa tttataaccc      3477
     Ser Gly Gly His Ser Glu Pro His  *
     1114                1119

     agtgagttca gcctttaaga taccttgatg aagacctgga ctattgaatg gagcagaaat     3537

     tcacctctct cactgactat tacagttgca tttttatgga gttcttcttc tcctaggatt     3597

     cctaagactg ctgctgaatt tataaaaatt aagtttgtga atgtgactac ttagtggtgt     3657

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     aatcattgaa gttataaatc tttgga atg agc aaa ctc aga atg gtg cta ctt      113
                                    Met Ser Lys Leu Arg Met Val Leu Leu
                                    1               5

     gaa gac tct gga tct gct gac ttc aga aga cat ttt gtc aac ctg agt      161
     Glu Asp Ser Gly Ser Ala Asp Phe Arg Arg His Phe Val Asn Leu Ser
     10              15              20              25

     ccc ttc acc att act gtg gtc tta ctt ctc agt gcc tgt ttt gtc acc      209
     Pro Phe Thr Ile Thr Val Val Leu Leu Leu Ser Ala Cys Phe Val Thr
     26              31              36              41

     agt tct ctt gga gga aca gac aag gag ctg agg cta gtg gat ggt gaa      257
     Ser Ser Leu Gly Gly Thr Asp Lys Glu Leu Arg Leu Val Asp Gly Glu
     42              47              52              57

     aac aag tgt agc ggg aga gtg gaa gtg aaa gtc cag gag gag tgg gga      305
     Asn Lys Cys Ser Gly Arg Val Glu Val Lys Val Gln Glu Glu Trp Gly
     58              63              68              73

     acg gtg tgt aat aat ggc tgg agc atg gaa gcg gtc tct gtg att tgt      353
     Thr Val Cys Asn Asn Gly Trp Ser Met Glu Ala Val Ser Val Ile Cys
     74              79              84              89

     aac cag ctg gga tgt cca act gct atc aaa gcc cct gga tgg gct aat      401
     Asn Gln Leu Gly Cys Pro Thr Ala Ile Lys Ala Pro Gly Trp Ala Asn
     90              95              100             105
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tcc agt gca ggt tct gga cgc att tgg atg gat cat gtt tct tgt cgt        449
Ser Ser Ala Gly Ser Gly Arg Ile Trp Met Asp His Val Ser Cys Arg
106             111             116                 121

ggg aat gag tca gct ctt tgg gat tgc aaa cat gat gga tgg gga aag        497
Gly Asn Glu Ser Ala Leu Trp Asp Cys Lys His Asp Gly Trp Gly Lys
122             127             132                 137

cat agt aac tgt act cac caa caa gat gct gga gtg acc tgc tca gat        545
His Ser Asn Cys Thr His Gln Gln Asp Ala Gly Val Thr Cys Ser Asp
138             143             148                 153

gga tcc aat ttg gaa atg agg ctg acg cgt gga ggg aat atg tgt tct       593
Gly Ser Asn Leu Glu Met Arg Leu Thr Arg Gly Gly Asn Met Cys Ser
154             159             164                 169

gga aga ata gag atc aaa ttc caa gga cgg tgg gga aca gtg tgt gat       641
Gly Arg Ile Glu Ile Lys Phe Gln Gly Arg Trp Gly Thr Val Cys Asp
170             175             180                 185

gat aac ttc aac ata gat cat gca tct gtc att tgt aga caa ctt gaa       689
Asp Asn Phe Asn Ile Asp His Ala Ser Val Ile Cys Arg Gln Leu Glu
186             191             196                 201

tgt gga agt gct gtc agt ttc tct ggt tca tct aat ttt gga gaa ggc       737
Cys Gly Ser Ala Val Ser Phe Ser Gly Ser Ser Asn Phe Gly Glu Gly
202             207             212                 217

tct gga cca atc tgg ttt gat gat ctt ata tgc aac gga aat gag tca       785
Ser Gly Pro Ile Trp Phe Asp Asp Leu Ile Cys Asn Gly Asn Glu Ser
218             223             228                 233

gct ctc tgg aac tgc aaa cat caa gga tgg gga aag cat aac tgt gat       833
Ala Leu Trp Asn Cys Lys His Gln Gly Trp Gly Lys His Asn Cys Asp
234             239             244                 249

cat gct gag gat gct gga gtg att tgc tca aag gga gca gat ctg agc       881
His Ala Glu Asp Ala Gly Val Ile Cys Ser Lys Gly Ala Asp Leu Ser
250             255             260                 265

ctg aga ctg gta gat gga gtc act gaa tgt tca gga aga tta gaa gtg       929
Leu Arg Leu Val Asp Gly Val Thr Glu Cys Ser Gly Arg Leu Glu Val
266             271             276                 281

aga ttc caa gga gaa tgg ggg aca ata tgt gat gac ggc tgg gac agt       977
Arg Phe Gln Gly Glu Trp Gly Thr Ile Cys Asp Asp Gly Trp Asp Ser
282             287             292                 297

tac gat gct gct gtg gca tgc aag caa ctg gga tgt cca act gcc gtc      1025
Tyr Asp Ala Ala Val Ala Cys Lys Gln Leu Gly Cys Pro Thr Ala Val
298             303             308                 313

aca gcc att ggt cga gtt aac gcc agt aag gga ttt gga cac atc tgg      1073
Thr Ala Ile Gly Arg Val Asn Ala Ser Lys Gly Phe Gly His Ile Trp
314             319             324                 329

ctt gac agc gtt tct tgc cag gga cat gaa cct gct gtc tgg caa tgt      1121
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1807

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Leu Asp Ser Val Ser Cys Gln Gly His Glu Pro Ala Val Trp Gln Cys
330             335             340             345

aaa cac cat gaa tgg gga aag cat tat tgc aat cac aat gaa gat gct      1169
Lys His His Glu Trp Gly Lys His Tyr Cys Asn His Asn Glu Asp Ala
346             351             356             361

ggc gtg aca tgt tct gat gga tca gat ctg gag cta aga ctt aga ggt      1217
Gly Val Thr Cys Ser Asp Gly Ser Asp Leu Glu Leu Arg Leu Arg Gly
362             367             372             377

gga ggc agc cgc tgt gct ggg aca gtt gag gtg gag att cag aga ctg      1265
Gly Gly Ser Arg Cys Ala Gly Thr Val Glu Val Glu Ile Gln Arg Leu
378             383             388             393

tta ggg aag gtg tgt gac aga ggc tgg gga ctg aaa gaa gct gat gtg      1313
Leu Gly Lys Val Cys Asp Arg Gly Trp Gly Leu Lys Glu Ala Asp Val
394             399             404             409

gtt tgc agg cag ctg gga tgt gga tct gca ctc aaa aca tct tat caa      1361
Val Cys Arg Gln Leu Gly Cys Gly Ser Ala Leu Lys Thr Ser Tyr Gln
410             415             420             425

gtg tac tcc aaa atc cag gca aca aac aca tgg ctg ttt cta agt agc      1409
Val Tyr Ser Lys Ile Gln Ala Thr Asn Thr Trp Leu Phe Leu Ser Ser
426             431             436             441

tgt aac gga aat gaa act tct ctt tgg gac tgc aag aac tgg caa tgg      1457
Cys Asn Gly Asn Glu Thr Ser Leu Trp Asp Cys Lys Asn Trp Gln Trp
442             447             452             457

ggt gga ctt acc tgt gat cac tat gaa gaa gcc aaa att acc tgc tca      1505
Gly Gly Leu Thr Cys Asp His Tyr Glu Glu Ala Lys Ile Thr Cys Ser
458             463             468             473

gcc cac agg gaa ccc aga ctg gtt gga ggg gac att ccc tgt tct gga      1553
Ala His Arg Glu Pro Arg Leu Val Gly Gly Asp Ile Pro Cys Ser Gly
474             479             484             489

cgt gtt gaa gtg aag cat ggt gac acg tgg ggc tcc atc tgt gat tcg      1601
Arg Val Glu Val Lys His Gly Asp Thr Trp Gly Ser Ile Cys Asp Ser
490             495             500             505

gac ttc tct ctg gaa gct gcc agc gtt cta tgc agg gaa tta cag tgt      1649
Asp Phe Ser Leu Glu Ala Ala Ser Val Leu Cys Arg Glu Leu Gln Cys
506             511             516             521

ggc aca gtt gtc tct atc ctg ggg gga gct cac ttt gga gag gga aat      1697
Gly Thr Val Val Ser Ile Leu Gly Gly Ala His Phe Gly Glu Gly Asn
522             527             532             537

gga cag atc tgg gct gaa gaa ttc cag tgt gag gga cat gag tcc cat      1745
Gly Gln Ile Trp Ala Glu Glu Phe Gln Cys Glu Gly His Glu Ser His
538             543             548             553

ctt tca ctc tgc cca gta gca ccc cgc cca gaa gga act tgt agc cac      1793
Leu Ser Leu Cys Pro Val Ala Pro Arg Pro Glu Gly Thr Cys Ser His
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1808

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agc agg gat gtt gga gta gtc tgc tca agt aag acc cag aaa aca tct    1841
Ser Arg Asp Val Gly Val Val Cys Ser Ser Lys Thr Gln Lys Thr Ser
570             575             580             585

tta att ggt tct tat act gtg aaa ggg aca ggg tta ggg agt cat agc    1889
Leu Ile Gly Ser Tyr Thr Val Lys Gly Thr Gly Leu Gly Ser His Ser
586             591             596             601

tgt ctt ttt cta aag ccc tgt ctc ctt cca gga tac aca gaa att cgc    1937
Cys Leu Phe Leu Lys Pro Cys Leu Leu Pro Gly Tyr Thr Glu Ile Arg
602             607             612             617

ttg gtg aat ggc aag acc ccg tgt gag ggc aga gtg gag ctc aaa acg    1985
Leu Val Asn Gly Lys Thr Pro Cys Glu Gly Arg Val Glu Leu Lys Thr
618             623             628             633

ctt ggt gcc tgg gga tcc ctc tgt aac tct cac tgg gac ata gaa gat    2033
Leu Gly Ala Trp Gly Ser Leu Cys Asn Ser His Trp Asp Ile Glu Asp
634             639             644             649

gcc cat gtt ctt tgc cag cag ctt aaa tgt gga gtt gcc ctt tct acc    2081
Ala His Val Leu Cys Gln Gln Leu Lys Cys Gly Val Ala Leu Ser Thr
650             655             660             665

cca gga gga gca cgt ttt gga aaa gga aat ggt cag atc tgg agg cat    2129
Pro Gly Gly Ala Arg Phe Gly Lys Gly Asn Gly Gln Ile Trp Arg His
666             671             676             681

atg ttt cac tgc act ggg act gag cag cac atg gga gat tgt cct gta    2177
Met Phe His Cys Thr Gly Thr Glu Gln His Met Gly Asp Cys Pro Val
682             687             692             697

act gct cta ggt gct tca tta tgt cct tca gag caa gtg gcc tct gta    2225
Thr Ala Leu Gly Ala Ser Leu Cys Pro Ser Glu Gln Val Ala Ser Val
698             703             708             713

atc tgc tca gga aac cag tcc caa aca ctg tcc tcg tgc aat tca tcg    2273
Ile Cys Ser Gly Asn Gln Ser Gln Thr Leu Ser Ser Cys Asn Ser Ser
714             719             724             729

tct ttg ggc cca aca agg cct acc att cca gaa gaa agt gct gtg gcc    2321
Ser Leu Gly Pro Thr Arg Pro Thr Ile Pro Glu Glu Ser Ala Val Ala
730             735             740             745

tgc ata gag agt ggt caa ctt cgc ctg gta aat gga gga ggt cgc tgt    2369
Cys Ile Glu Ser Gly Gln Leu Arg Leu Val Asn Gly Gly Gly Arg Cys
746             751             756             761

gct ggg aga gta gag atc tat cat gag ggc tcc tgg ggc acc atc tgt    2417
Ala Gly Arg Val Glu Ile Tyr His Glu Gly Ser Trp Gly Thr Ile Cys
762             767             772             777

gat gac agc tgg gac ctg agt gat gcc cac gtg gtt tgc aga cag ctg    2465
Asp Asp Ser Trp Asp Leu Ser Asp Ala His Val Val Cys Arg Gln Leu
778             783             788             793
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ggc tgt gga gag gcc att aat gcc act ggt tct gct cat ttt ggg gaa     2513
Gly Cys Gly Glu Ala Ile Asn Ala Thr Gly Ser Ala His Phe Gly Glu
794             799             804             809

gga aca ggg ccc atc tgg ctg gat gag atg aaa tgc aat gga aaa gaa     2561
Gly Thr Gly Pro Ile Trp Leu Asp Glu Met Lys Cys Asn Gly Lys Glu
810             815             820             825

tcc cgc att tgg cag tgc cat tca cac ggc tgg ggg cag caa aat tgc     2609
Ser Arg Ile Trp Gln Cys His Ser His Gly Trp Gly Gln Gln Asn Cys
826             831             836             841

agg cac aag gag gat gcg gga gtt atc tgc tca gaa ttc atg tct ctg     2657
Arg His Lys Glu Asp Ala Gly Val Ile Cys Ser Glu Phe Met Ser Leu
842             847             852             857

aga ctg acc agt gaa gcc agc aga gag gcc tgt gca ggg cgt ctg gaa     2705
Arg Leu Thr Ser Glu Ala Ser Arg Glu Ala Cys Ala Gly Arg Leu Glu
858             863             868             873

gtt ttt tac aat gga gct tgg ggc act gtt ggc aag agt agc atg tct     2753
Val Phe Tyr Asn Gly Ala Trp Gly Thr Val Gly Lys Ser Ser Met Ser
874             879             884             889

gaa acc act gtg ggt gtg gtg tgc agg cag ctg ggc tgt gca gac aaa     2801
Glu Thr Thr Val Gly Val Val Cys Arg Gln Leu Gly Cys Ala Asp Lys
890             895             900             905

ggg aaa atc aac cct gca tct tta gac aag gcc atg tcc att ccc atg     2849
Gly Lys Ile Asn Pro Ala Ser Leu Asp Lys Ala Met Ser Ile Pro Met
906             911             916             921

tgg gtg gac aat gtt cag tgt cca aaa gga cct gac acg ctg tgg cag     2897
Trp Val Asp Asn Val Gln Cys Pro Lys Gly Pro Asp Thr Leu Trp Gln
922             927             932             937

tgc cca tca tct cca tgg gag aag aga ctg gcc agc ccc tcg gag gag     2945
Cys Pro Ser Ser Pro Trp Glu Lys Arg Leu Ala Ser Pro Ser Glu Glu
938             943             948             953

acc tgg atc aca tgt gac aac aag ata aga ctt cag gaa gga ccc act     2993
Thr Trp Ile Thr Cys Asp Asn Lys Ile Arg Leu Gln Glu Gly Pro Thr
954             959             964             969

tcc tgt tct gga cgt gtg gag atc tgg cat gga ggt tcc tgg ggg aca     3041
Ser Cys Ser Gly Arg Val Glu Ile Trp His Gly Gly Ser Trp Gly Thr
970             975             980             985

gtg tgt gat gac tct tgg gac ttg gac gat gct cag gtg gtg tgt caa     3089
Val Cys Asp Asp Ser Trp Asp Leu Asp Asp Ala Gln Val Val Cys Gln
986             991             996             1001

caa ctt ggc tgt ggt cca gct ttg aaa gca ttc aaa gaa gca gag ttt     3137
Gln Leu Gly Cys Gly Pro Ala Leu Lys Ala Phe Lys Glu Ala Glu Phe
1002            1007            1012            1017
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ggt cag ggg act gga ccg ata tgg ctc aat gaa gtg aag tgc aaa ggg      3185
Gly Gln Gly Thr Gly Pro Ile Trp Leu Asn Glu Val Lys Cys Lys Gly
1018                1023                1028                1033

aat gag tct tcc ttg tgg gat tgt cct gcc aga cgc tgg ggc cat agt      3233
Asn Glu Ser Ser Leu Trp Asp Cys Pro Ala Arg Arg Trp Gly His Ser
1034                1039                1044                1049

gag tgt ggg cac aag gaa gac gct gca gtg aat tgc aca gat att tca      3281
Glu Cys Gly His Lys Glu Asp Ala Ala Val Asn Cys Thr Asp Ile Ser
1050                1055                1060                1065

gtg cag aaa acc cca caa aaa gcc aca aca ggt cgc tca tcc cgt cag      3329
Val Gln Lys Thr Pro Gln Lys Ala Thr Thr Gly Arg Ser Ser Arg Gln
1066                1071                1076                1081

tca tcc ttt att gca gtc ggg atc ctt ggg gtt gtt ctg ttg gcc att      3377
Ser Ser Phe Ile Ala Val Gly Ile Leu Gly Val Val Leu Leu Ala Ile
1082                1087                1092                1097

ttc gtc gca tta ttc ttc ttg act aaa aag cga aga cag aga cag cgg      3425
Phe Val Ala Leu Phe Phe Leu Thr Lys Lys Arg Arg Gln Arg Gln Arg
1098                1103                1108                1113

ctt gca gtt tcc tca aga gga gag aac tta gtc cac caa att caa tac      3473
Leu Ala Val Ser Ser Arg Gly Glu Asn Leu Val His Gln Ile Gln Tyr
1114                1119                1124                1129

cgg gag atg aat tct tgc ctg aat gca gat gat ctg gac cta atg aat      3521
Arg Glu Met Asn Ser Cys Leu Asn Ala Asp Asp Leu Asp Leu Met Asn
1130                1135                1140                1145

tcc tca gga ggc cat tct gag cca cac tga a aaggaaaatg ggaatttata      3572
Ser Ser Gly Gly His Ser Glu Pro His  *
1146                1151

acccagtgag ttcagccttt aagatacctt gatgaagacc tggactattg aatggagcag      3632

aaattcacct ctctcactga ctattacagt tgcattttta tggagttctt cttctcctag      3692

gattcctaag actgctgctg aatttataaa aattaagttt gtgaatgtga ctacttagtg      3752

gtgtatatga gactttcaag ggaattaaat aaataaataa gaatgttaaa aaaaaaaaa      3811
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actaccgttc ccggcatgcc atgaaattgg cctcggcgct gaggcggggt ccggccctcc       180

acccgctccc gccgcgcgcg aatcgcggtc gcgagcc atg gag gag gag gca tcg       235
                                           Met Glu Glu Glu Ala Ser
                                             1

tcc ccg ggg ctg ggc tgc agc aag ccg cac ctg gag aag ctg acc ctg       283
Ser Pro Gly Leu Gly Cys Ser Lys Pro His Leu Glu Lys Leu Thr Leu
  7               12              17                      22

ggc atc acg cgc atc cta gaa tct tcc cca ggt gtg act gag gtg acc       331
Gly Ile Thr Arg Ile Leu Glu Ser Ser Pro Gly Val Thr Glu Val Thr
 23               28              33                      38

atc ata gaa aag cct cct gct gaa cgt cat atg att tct tcc tgg gaa       379
Ile Ile Glu Lys Pro Pro Ala Glu Arg His Met Ile Ser Ser Trp Glu
 39               44              49                      54

caa aag aat aac tgt gtg atg cct gaa gat gtg aag aac ttt tac ctg       427
Gln Lys Asn Asn Cys Val Met Pro Glu Asp Val Lys Asn Phe Tyr Leu
 55               60              65                      70

atg acc aat ggc ttc cac atg aca tgg agt gtg aag ctg gat gag cac       475
Met Thr Asn Gly Phe His Met Thr Trp Ser Val Lys Leu Asp Glu His
 71               76              81                      86

atc att cca ctg gga agc atg gca att aac agc atc tca aaa ctg act       523
Ile Ile Pro Leu Gly Ser Met Ala Ile Asn Ser Ile Ser Lys Leu Thr
 87               92              97                     102

cag ctc acc cag tct tcc atg tat tca ctt cct aat gca ccc act ctg       571
Gln Leu Thr Gln Ser Ser Met Tyr Ser Leu Pro Asn Ala Pro Thr Leu
103              108             113                     118

gca gac ctg gag gac gat aca cat gaa gcc agt gat gat cag cca gag       619
Ala Asp Leu Glu Asp Asp Thr His Glu Ala Ser Asp Asp Gln Pro Glu
119              124             129                     134

aag cct cac ttt gac tct cgc agt gtg ata ttt gag ctg gat tca tgc       667
Lys Pro His Phe Asp Ser Arg Ser Val Ile Phe Glu Leu Asp Ser Cys
135              140             145                     150

aat ggc agt ggg aaa gtt tgc ctt gtc tac aaa agt ggg aaa cca gca       715
Asn Gly Ser Gly Lys Val Cys Leu Val Tyr Lys Ser Gly Lys Pro Ala
151              156             161                     166

tta gca gaa gac act gag atc tgg ttc ctg gac aga gcg tta tac tgg       763
Leu Ala Glu Asp Thr Glu Ile Trp Phe Leu Asp Arg Ala Leu Tyr Trp
167              172             177                     182

cat ttt ctc aca gac acc ttt act gcc tat tac cgc ctg ctc atc acc       811
His Phe Leu Thr Asp Thr Phe Thr Ala Tyr Tyr Arg Leu Leu Ile Thr
183              188             193                     198
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1812

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cac ctg ggc ctg ccc cag tgg caa tat gcc ttc acc agc tat ggc att      859
His Leu Gly Leu Pro Gln Trp Gln Tyr Ala Phe Thr Ser Tyr Gly Ile
199             204             209             214

agc cca cag gcc aag caa tgg ttc agc atg tat aaa cct atc acc tac      907
Ser Pro Gln Ala Lys Gln Trp Phe Ser Met Tyr Lys Pro Ile Thr Tyr
215             220             225             230

aac aca aac ctg ctc aca gaa gag acc gac tcc ttt gtg aat aag cta      955
Asn Thr Asn Leu Leu Thr Glu Glu Thr Asp Ser Phe Val Asn Lys Leu
231             236             241             246

gat ccc agc aaa gtg ttt aag agc aag aac aag atc gta atc cca aaa     1003
Asp Pro Ser Lys Val Phe Lys Ser Lys Asn Lys Ile Val Ile Pro Lys
247             252             257             262

aag aaa ggg cct gtg cag cct gca ggt ggc cag aaa ggg ccc tca gga     1051
Lys Lys Gly Pro Val Gln Pro Ala Gly Gly Gln Lys Gly Pro Ser Gly
263             268             273             278

ccc tcc ggt ccc tcc act tcc tcc act tct aaa tcc tcc tct ggc tct     1099
Pro Ser Gly Pro Ser Thr Ser Ser Thr Ser Lys Ser Ser Ser Gly Ser
279             284             289             294

gga aac ccc acc cgg aag tga gc acccctccct ccaactccct accagctcca     1152
Gly Asn Pro Thr Arg Lys  *
295             300

gagtggtggt ttccatgcac agatggccct aggggtgacc tccagttttg cgtgtggacc   1212

gtaggcctct ttctagttga atgaccaaaa ttgtaaggct tttagtccca ccgacattag   1272

ccaggctcgt agtgaggcct ccagagcagg ttgtgctgtc ccctgcctct ggaagcaatg   1332

gggaatttgg aatcttgtgt aagtgcccaa ataagtctga gtgctttcct cttcttcaac   1392

actcaaccct caatccctta gcactgattg attagagagg tcccccaaag aaaccactgg   1452

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ctatttaaat ttaaagtaaa ttgtatgaaa aattcatttc ttcaattgca ttagccacat   1572

tttgagtatt catgtggctg gtagattctg tattagcaca aagatatgga acatttccat   1632

caccacagaa agttctgttg acagcactg cattagaata ttttcatact gctcttcctc     1692

aattaatttt tgttgttaat gttgatgtct tcattggatg ggtcataatg ttccatgaaa   1752

cctctcaagt acacaattgt atgttctttg tatcccttac cacaaatatc tcgctctgct   1812

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actaccgttc ccggcatgcc atgaaattgg cctcggcgct gaggcggggt ccggccctcc     180

acccgctccc gccgcgcgcg aatcgcggtc gcgagcc atg gag gag gag gca tcg     235
                                          Met Glu Glu Glu Ala Ser
                                            1

tcc ccg ggg ctg ggc tgc agc aag ccg cac ctg gag aag ctg acc ctg     283
Ser Pro Gly Leu Gly Cys Ser Lys Pro His Leu Glu Lys Leu Thr Leu
 7               12                  17                      22

ggc atc acg cgc atc cta gaa tct tcc cca ggt gtg act gag gtg acc     331
Gly Ile Thr Arg Ile Leu Glu Ser Ser Pro Gly Val Thr Glu Val Thr
 23                  28                  33                      38

atc ata gaa aag cct cct gct gaa cgt cat atg att tct tcc tgg gaa     379
Ile Ile Glu Lys Pro Pro Ala Glu Arg His Met Ile Ser Ser Trp Glu
 39                  44                  49                      54

caa aag aat aac tgt gtg atg cct gaa gat gtg aag aac ttt tac ctg     427
Gln Lys Asn Asn Cys Val Met Pro Glu Asp Val Lys Asn Phe Tyr Leu
 55                  60                  65                      70

atg acc aat ggc ttc cac atg aca tgg agt gtg aag ctg gat gcc agt     475
Met Thr Asn Gly Phe His Met Thr Trp Ser Val Lys Leu Asp Ala Ser
 71                  76                  81                      86

gat gat cag cca gag aag cct cac ttt gac tct cgc agt gtg ata ttt     523
Asp Asp Gln Pro Glu Lys Pro His Phe Asp Ser Arg Ser Val Ile Phe
 87                  92                  97                      102

gag ctg gat tca tgc aat ggc agt ggg aaa gtt tgc ctt gtc tac aaa     571
Glu Leu Asp Ser Cys Asn Gly Ser Gly Lys Val Cys Leu Val Tyr Lys
103                 108                 113                     118

agt ggg aaa cca gca tta gca gaa gac act gag atc tgg ttc ctg gac     619
Ser Gly Lys Pro Ala Leu Ala Glu Asp Thr Glu Ile Trp Phe Leu Asp
119                 124                 129                     134

aga gcg tta tac tgg cat ttt ctc aca gac acc ttt act gcc tat tac     667
Arg Ala Leu Tyr Trp His Phe Leu Thr Asp Thr Phe Thr Ala Tyr Tyr
135                 140                 145                     150

cgc ctg ctc atc acc cac ctg ggc ctg ccc cag tgg caa tat gcc ttc     715
Arg Leu Leu Ile Thr His Leu Gly Leu Pro Gln Trp Gln Tyr Ala Phe
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acc agc tat ggc att agc cca cag gcc aag caa tgg ttc agc atg tat      763
Thr Ser Tyr Gly Ile Ser Pro Gln Ala Lys Gln Trp Phe Ser Met Tyr
167             172             177             182

aaa cct atc acc tac aac aca aac ctg ctc aca gaa gag acc gac tcc      811
Lys Pro Ile Thr Tyr Asn Thr Asn Leu Leu Thr Glu Glu Thr Asp Ser
183             188             193             198

ttt gtg aat aag cta gat ccc agc aaa gtg ttt aag agc aag aac aag      859
Phe Val Asn Lys Leu Asp Pro Ser Lys Val Phe Lys Ser Lys Asn Lys
199             204             209             214

atc gta atc cca aaa aag aaa ggg cct gtg cag cct gca ggt ggc cag      907
Ile Val Ile Pro Lys Lys Lys Gly Pro Val Gln Pro Ala Gly Gly Gln
215             220             225             230

aaa ggg ccc tca gga ccc tcc ggt ccc tcc act tcc tcc act tct aaa      955
Lys Gly Pro Ser Gly Pro Ser Gly Pro Ser Thr Ser Ser Thr Ser Lys
231             236             241             246

tcc tcc tct ggc tct gga aac ccc acc cgg aag tga gcac ccctccctcc     1005
Ser Ser Ser Gly Ser Gly Asn Pro Thr Arg Lys *
247             252             257
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aactccctac cagctccaga gtggtggttt ccatgcacag atggccctag gggtgacctc   1065

cagttttgcg tgtggaccgt aggcctcttt ctagttgaat gaccaaaatt gtaaggcttt   1125

tagtcccacc gacattagcc aggctcgtag tgaggcctcc agagcaggtt gtgctgtccc   1185

ctgcctctgg aagcaatggg gaatttggaa tcttgtgtaa gtgcccaaat aagtctgagt   1245

gctttcctct tcttcaacac tcaaccctca atcccttagc actgattgat tagagaggtc   1305

ccccaaagaa accactggtt ttgacccatg aagcattaga actgcattgt tcattcagga   1365

gccactagtc acatatgact atttaaattt aaagtaaatt gtatgaaaaa ttcatttctt   1425

caattgcatt agccacattt tgagtattca tgtggctggt agattctgta ttagcacaaa   1485

gatatggaac atttccatca ccacagaaag ttctgttgga cagcactgca ttagaatatt   1545

ttcatactgc tcttcctcaa ttaatttttg ttgttaatgt tgatgtcttc attggatggg   1605

tcataatgtt ccatgaaacc tctcaagtac acaattgtat gttctttgta tcccttacca   1665

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aaaaaaaaaa a   1736

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cgtgggttgg gtcgtacttg ggacctcggc gaagaggacc cgtttatttt tttttctttc     180

caaa atg gca gcc tcc agt cgc gca caa gtg tta tct ctg tac cgg gcg        229
     Met Ala Ala Ser Ser Arg Ala Gln Val Leu Ser Leu Tyr Arg Ala
      1               5                   10

atg ctg aga gag agc aag cgt ttc agc gcc tac aat tac aga aca tat        277
Met Leu Arg Glu Ser Lys Arg Phe Ser Ala Tyr Asn Tyr Arg Thr Tyr
 16               21                  26                  31

gct gtc agg agg ata aga gat gcc ttc aga gaa aat aaa aat gta aag        325
Ala Val Arg Arg Ile Arg Asp Ala Phe Arg Glu Asn Lys Asn Val Lys
 32               37                  42                  47

gat cct gta gaa att caa acc cta gtg aat aaa gcc aag aga gac ctt        373
Asp Pro Val Glu Ile Gln Thr Leu Val Asn Lys Ala Lys Arg Asp Leu
 48               53                  58                  63

gga gta att cgt cga cag gtc cac att ggc caa ctg tat tca act gac        421
Gly Val Ile Arg Arg Gln Val His Ile Gly Gln Leu Tyr Ser Thr Asp
 64               69                  74                  79

aag ctg atc att gag aat cga gac atg ccc agg acc tag caagccgggg         470
Lys Leu Ile Ile Glu Asn Arg Asp Met Pro Arg Thr  *
 80               85                  90

accagccacc agtggcggcc agggaccacc ttcagcatcc actctctgtt tgagctgggg      530

gctcccaaaa ccagcttaca atagccttt gcg                                    563
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<400> 542

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gcacgagcgg gtccgggagc gcggcggaga cg atg cct gag atc aga gtc acg        53
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Pro Leu Gly Ala Gly Gln Asp Val Gly Arg Ser Cys Ile Leu Val Ser
 8   13   18   23

att gcg ggc aag aat gtc atg ctg gac tgt gga atg cac atg ggc ttc   149
Ile Ala Gly Lys Asn Val Met Leu Asp Cys Gly Met His Met Gly Phe
 24   29   34   39

aat gac gac cga cgc ttc cct gac ttc tcc tac atc acc cag aac ggc   197
Asn Asp Asp Arg Arg Phe Pro Asp Phe Ser Tyr Ile Thr Gln Asn Gly
 40   45   50   55

cgc cta aca gac ttc ctg gac tgt gtg atc att agc cac ttc cac ctg   245
Arg Leu Thr Asp Phe Leu Asp Cys Val Ile Ile Ser His Phe His Leu
 56   61   66   71

gac cac tgc ggg gca ctc ccc tac ttc agc gag atg gtg ggc tac gac   293
Asp His Cys Gly Ala Leu Pro Tyr Phe Ser Glu Met Val Gly Tyr Asp
 72   77   82   87

ggc ccc atc tac atg act cac ccc acc cag gcc atc tgc ccc atc ttg   341
Gly Pro Ile Tyr Met Thr His Pro Thr Gln Ala Ile Cys Pro Ile Leu
 88   93   98   103

ctg gag gac tac cgc aag atc gcc gta gac aag aag ggc gag gcc aac   389
Leu Glu Asp Tyr Arg Lys Ile Ala Val Asp Lys Lys Gly Glu Ala Asn
 104   109   114   119

ttc ttc acc tcc cag atg atc aaa gac tgc atg aag aag gtg gtg gct   437
Phe Phe Thr Ser Gln Met Ile Lys Asp Cys Met Lys Lys Val Val Ala
 120   125   130   135

gtc cac ctc cac cag acg gtc cag gta gat gat gag ctg gag atc aag   485
Val His Leu His Gln Thr Val Gln Val Asp Asp Glu Leu Glu Ile Lys
 136   141   146   151

gcc tac tat gca ggc cac gtg ctg ggg gca gcc atg ttc cag att aaa   533
Ala Tyr Tyr Ala Gly His Val Leu Gly Ala Ala Met Phe Gln Ile Lys
 152   157   162   167

gtg ggc tca gag tct gtg gtc tac acg ggt gat tat aac atg acc cca   581
Val Gly Ser Glu Ser Val Val Tyr Thr Gly Asp Tyr Asn Met Thr Pro
 168   173   178   183

gac cga cac tta gga gct gcc tgg att gac aag tgc cgc ccc aac ctg   629
Asp Arg His Leu Gly Ala Ala Trp Ile Asp Lys Cys Arg Pro Asn Leu
 184   189   194   199

ctc atc aca gag tcc acg tac gcc acg acc atc cgt gac tcc aag cgc   677
Leu Ile Thr Glu Ser Thr Tyr Ala Thr Thr Ile Arg Asp Ser Lys Arg
 200   205   210   215

tgc cgg gag cga gac ttc ctg aag aaa gtc cac gag acc gtg gag cgt   725
Cys Arg Glu Arg Asp Phe Leu Lys Lys Val His Glu Thr Val Glu Arg
 216   221   226   231

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ggt ggg aag gtg ctg ata cct gtg ttc gcg ctg ggc cgc gcc cag gag        773
Gly Gly Lys Val Leu Ile Pro Val Phe Ala Leu Gly Arg Ala Gln Glu
232                 237                 242                 247

ctc tgc atc ctc ctg gag acc ttc tgg gag cgc atg aac ctg aag gtg        821
Leu Cys Ile Leu Leu Glu Thr Phe Trp Glu Arg Met Asn Leu Lys Val
248                 253                 258                 263

ccc atc tac ttc tcc acg ggg ctg acc gag aag gcc aac cac tac tac        869
Pro Ile Tyr Phe Ser Thr Gly Leu Thr Glu Lys Ala Asn His Tyr Tyr
264                 269                 274                 279

aag ctg ttc atc ccc tgg acc aac cag aag atc cgc aag act ttc gtg        917
Lys Leu Phe Ile Pro Trp Thr Asn Gln Lys Ile Arg Lys Thr Phe Val
280                 285                 290                 295

cag agg aac atg ttt gag ttc aag cac atc aag gcc ttc gac cgg gct        965
Gln Arg Asn Met Phe Glu Phe Lys His Ile Lys Ala Phe Asp Arg Ala
296                 301                 306                 311

ttt gct gac aac cca gga ccg atg gtt gtg ttt gcc acg cca gga atg       1013
Phe Ala Asp Asn Pro Gly Pro Met Val Val Phe Ala Thr Pro Gly Met
312                 317                 322                 327

ctg cac gct ggg cag tcc ctg cag atc ttc cgg aaa tgg gcc gga aac       1061
Leu His Ala Gly Gln Ser Leu Gln Ile Phe Arg Lys Trp Ala Gly Asn
328                 333                 338                 343

gaa aag aac atg gtc atc atg ccc ggc tac tgc gtg cag ggc acc gtc       1109
Glu Lys Asn Met Val Ile Met Pro Gly Tyr Cys Val Gln Gly Thr Val
344                 349                 354                 359

ggc cac aag atc ctc agc ggg cag cgg aag ctc gag atg gag ggg cgg       1157
Gly His Lys Ile Leu Ser Gly Gln Arg Lys Leu Glu Met Glu Gly Arg
360                 365                 370                 375

cag gtg ctg gag gtc aag atg cag gtg gag tac atg tca ttc agc gca       1205
Gln Val Leu Glu Val Lys Met Gln Val Glu Tyr Met Ser Phe Ser Ala
376                 381                 386                 391

cac gcg gac gcc aag ggc atc atg cag ctg gtg ggc cag gca gag ccg       1253
His Ala Asp Ala Lys Gly Ile Met Gln Leu Val Gly Gln Ala Glu Pro
392                 397                 402                 407

gag agc gtg ctg ctg gtg cat ggc gag gcc aag aag atg gag ttc ctg       1301
Glu Ser Val Leu Leu Val His Gly Glu Ala Lys Lys Met Glu Phe Leu
408                 413                 418                 423

aag cag aag atc gag cag gag ctc cgg gtc aac tgc tac atg ccg gcc       1349
Lys Gln Lys Ile Glu Gln Glu Leu Arg Val Asn Cys Tyr Met Pro Ala
424                 429                 434                 439

aat ggc gag acg gtg acg ctg ccc aca agc ccc agc atc ccc gta ggc       1397
Asn Gly Glu Thr Val Thr Leu Pro Thr Ser Pro Ser Ile Pro Val Gly
440                 445                 450                 455
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atc tcg ctg ggg ctg ctg aag cgg gag atg gcg cag ggg ctg ctc cct       1445
Ile Ser Leu Gly Leu Leu Lys Arg Glu Met Ala Gln Gly Leu Leu Pro
456             461             466             471

gag gcc aag aag cct cgg ctc ctg cac ggc acc ctg atc atg aag gac       1493
Glu Ala Lys Lys Pro Arg Leu Leu His Gly Thr Leu Ile Met Lys Asp
472             477             482             487

agc aac ttc cgg ctg gtg tcc tca gag caa gcc ctc aaa gag ctg ggt       1541
Ser Asn Phe Arg Leu Val Ser Ser Glu Gln Ala Leu Lys Glu Leu Gly
488             493             498             503

ctg gct gag cac cag ctg cgc ttc acc tgc cgc gtg cac ctg cat gac       1589
Leu Ala Glu His Gln Leu Arg Phe Thr Cys Arg Val His Leu His Asp
504             509             514             519

aca cgc aag gag cag gag acg gca ttg cgc gtc tac agc cac ctc aag       1637
Thr Arg Lys Glu Gln Glu Thr Ala Leu Arg Val Tyr Ser His Leu Lys
520             525             530             535

agc gtc ctg aag gac cac tgt gtg cag cac ctc cca gac ggc tct gtg       1685
Ser Val Leu Lys Asp His Cys Val Gln His Leu Pro Asp Gly Ser Val
536             541             546             551

act gtg gag tcc gtc ctc ctc cag gcc gcc gcc cct tct gag gac cca       1733
Thr Val Glu Ser Val Leu Leu Gln Ala Ala Ala Pro Ser Glu Asp Pro
552             557             562             567

ggc acc aag gtg ctg ctg gtc tcc tgg acc tac cag gac gag gag ctg       1781
Gly Thr Lys Val Leu Leu Val Ser Trp Thr Tyr Gln Asp Glu Glu Leu
568             573             578             583

ggg agc ttc ctc aca tct ctg ctg aag aag ggc ctc ccc cag gcc ccc       1829
Gly Ser Phe Leu Thr Ser Leu Leu Lys Lys Gly Leu Pro Gln Ala Pro
584             589             594             599

agc tga ggccggcaac tcacccagcc gccacctctg ccctctccca gctggacaga        1885
Ser *
600

ccctgggcct gcacttcagg actgtgggtg ccctgggtga acagaccctg caggtcccat       1945

ccctggggac agaggccttg tgtcacctgc ctgcccaggc agctgtttgc agctgaagaa       2005

acaaactggt ctccaggctg tcttgccttt attcctggtt agggcaggtg gtcctagaca       2065

gcagtttcca gtaaaagctg aacaaaaaaa aaaaa                                  2100
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1819

<400> 543

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ggccagtgaa ttgaatttag gtgacactat agaagagct     atg acg tcg cat gca        54
                                               Met Thr Ser His Ala
                                                1

cgc gta cgt aag ctt gga tcc tct aga gcg gcc cta cta cta cta aat        102
Arg Val Arg Lys Leu Gly Ser Ser Arg Ala Ala Leu Leu Leu Leu Asn
 6               11              16                          21

tcg cgg ccg cgt cga cca aaa atg gcg gta gtt ggt gtg tcc tcg gtt        150
Ser Arg Pro Arg Arg Pro Lys Met Ala Val Val Gly Val Ser Ser Val
 22              27              32                          37

tct cgg ctg ctg ggt cgg tcc cgc cca cag ctg ggg cgg cct atg tcg        198
Ser Arg Leu Leu Gly Arg Ser Arg Pro Gln Leu Gly Arg Pro Met Ser
 38              43              48                          53

agt ggc gcc cat ggc gaa gag ggc tca gct cgc atg tgg aag act ctc        246
Ser Gly Ala His Gly Glu Glu Gly Ser Ala Arg Met Trp Lys Thr Leu
 54              59              64                          69

acc ttc ttc gtc gcg ctc ccc ggg gtg gca gtc agc atg ctg aat gtg        294
Thr Phe Phe Val Ala Leu Pro Gly Val Ala Val Ser Met Leu Asn Val
 70              75              80                          85

tac ctg aag tcg cac cac gga gag cac gag aga ccc gag ttc atc gcc        342
Tyr Leu Lys Ser His His Gly Glu His Glu Arg Pro Glu Phe Ile Ala
 86              91              96                         101

tac ccc cat ctc cgc atc agg acc aag ccg ttt ccc tgg gga gat ggt        390
Tyr Pro His Leu Arg Ile Arg Thr Lys Pro Phe Pro Trp Gly Asp Gly
102             107             112                        117

aac cat act cta ttc cat aac cct cat gtg aat cca ctt cca act ggc        438
Asn His Thr Leu Phe His Asn Pro His Val Asn Pro Leu Pro Thr Gly
118             123             128                        .133

tac gaa gat gaa taa agagaatctg gaccactacc cgggcaccag ggaccacagc        493
Tyr Glu Asp Glu  *
134

actggtttgg accgttactc tgcacatgga ccagaaaaag tatatgggac cttaagctca      553

ccttctttac ttgtatcaaa tgatgactgg tatactggtc tcccatccct ttgcttgtgg      613

caggagatgg cttaaataaa taacttaaac ttaaaaaaaa aaaa                        657
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<220>
<221> CDS
<222> (72)..(1208)

<400> 544
atttggccct cgaggccaag aattcggcac gagattgaac tcgagttgga agaggcgagt      60

ccggtctcaa a atg gag gta aaa ccg ccg ccc ggt cgc ccc cag ccc gac      110
            Met Glu Val Lys Pro Pro Pro Gly Arg Pro Gln Pro Asp
             1           5               10

tcc ggc cgt cgc cgt cgc cgc cgg ggg gag gag ggc cat gat cca aag      158
Ser Gly Arg Arg Arg Arg Arg Arg Gly Glu Glu Gly His Asp Pro Lys
 14              19                  24                  29

gaa cca gag cag ttg aga aaa ctg ttt att ggt ggt ctg agc ttt gaa      206
Glu Pro Glu Gln Leu Arg Lys Leu Phe Ile Gly Gly Leu Ser Phe Glu
 30              35                  40                  45

act aca gat gat agt tta cga gaa cat ttt gag aaa tgg ggc aca ctc      254
Thr Thr Asp Asp Ser Leu Arg Glu His Phe Glu Lys Trp Gly Thr Leu
 46              51                  56                  61

aca gat tgt gtg gta atg aga gac ccc caa aca aaa cgt tcc agg ggc      302
Thr Asp Cys Val Val Met Arg Asp Pro Gln Thr Lys Arg Ser Arg Gly
 62              67                  72                  77

ttt ggt ttt gtg act tat tct tgt gtt gaa gag gtg gat gca gca atg      350
Phe Gly Phe Val Thr Tyr Ser Cys Val Glu Glu Val Asp Ala Ala Met
 78              83                  88                  93

tgt gct cga cca cac aag gtt gat ggg cgt gta gtg gaa cca aag aga      398
Cys Ala Arg Pro His Lys Val Asp Gly Arg Val Val Glu Pro Lys Arg
 94              99                  104                 109

gct gtt tct aga gag gat tct gta aag cct ggt gcc cat cta aca gtg      446
Ala Val Ser Arg Glu Asp Ser Val Lys Pro Gly Ala His Leu Thr Val
110             115                 120                 125

aag aaa att ttt gtt ggt ggt att aaa gaa gat aca gaa gaa tat aat      494
Lys Lys Ile Phe Val Gly Gly Ile Lys Glu Asp Thr Glu Glu Tyr Asn
126             131                 136                 141

ttg aga gac tac ttt gaa aag tat ggc aag att gaa acc ata gaa gtt      542
Leu Arg Asp Tyr Phe Glu Lys Tyr Gly Lys Ile Glu Thr Ile Glu Val
142             147                 152                 157

atg gaa gac agg cag agt gga aaa aag aga gga ttt gct ttt gta act      590
Met Glu Asp Arg Gln Ser Gly Lys Lys Arg Gly Phe Ala Phe Val Thr
158             163                 168                 173

ttt gat gat cat gat aca gtt gat aaa att gtt gtt cag aaa tac cac      638
Phe Asp Asp His Asp Thr Val Asp Lys Ile Val Val Gln Lys Tyr His
174             179                 184                 189

act att aat ggg cat aat tgt gaa gtg aaa aag gcc ctt tct aaa caa      686
```

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Thr Ile Asn Gly His Asn Cys Glu Val Lys Lys Ala Leu Ser Lys Gln
190             195             200             205

gag atg cag tct gct gga tca cag aga ggt cgt gga ggt gga tct ggc        734
Glu Met Gln Ser Ala Gly Ser Gln Arg Gly Arg Gly Gly Gly Ser Gly
206             211             216             221

aat ttt atg ggt cgc gga ggg aac ttt gga ggt ggt gga ggt aat ttt        782
Asn Phe Met Gly Arg Gly Gly Asn Phe Gly Gly Gly Gly Asn Phe
222             227             232             237

ggc cgt ggt gga aac ttt ggt gga aga gga ggc tat ggt ggt gga ggt        830
Gly Arg Gly Gly Asn Phe Gly Gly Arg Gly Gly Tyr Gly Gly Gly Gly
238             243             248             253

ggt ggc agc aga ggt agt tat gga gga ggt gat ggt gga tat aat gga        878
Gly Gly Ser Arg Gly Ser Tyr Gly Gly Gly Asp Gly Gly Tyr Asn Gly
254             259             264             269

ttt gga ggt gat ggt ggc aac tat ggc ggt ggt cct ggt tat agt agt        926
Phe Gly Gly Asp Gly Gly Asn Tyr Gly Gly Gly Pro Gly Tyr Ser Ser
270             275             280             285

aga ggg ggc tat ggt ggt ggt gga cca gga tat gga aac caa ggt ggt        974
Arg Gly Gly Tyr Gly Gly Gly Gly Pro Gly Tyr Gly Asn Gln Gly Gly
286             291             296             301

gga tat ggt gga ggt gga gga tat gat ggt tac aat gaa gga gga aat        1022
Gly Tyr Gly Gly Gly Gly Gly Tyr Asp Gly Tyr Asn Glu Gly Gly Asn
302             307             312             317

ttt ggc ggt ggt aac tat ggt ggt ggt ggg aac tat aat gat ttt gga        1070
Phe Gly Gly Gly Asn Tyr Gly Gly Gly Gly Asn Tyr Asn Asp Phe Gly
318             323             328             333

aat tat agt gga caa cag caa tca aat tat gga ccc atg aaa ggg ggc        1118
Asn Tyr Ser Gly Gln Gln Gln Ser Asn Tyr Gly Pro Met Lys Gly Gly
334             339             344             349

agt ttt ggt gga aga agc tcg ggc agt ccc tat ggt ggt ggt tat gga        1166
Ser Phe Gly Gly Arg Ser Ser Gly Ser Pro Tyr Gly Gly Gly Tyr Gly
350             355             360             365

tct ggt ggt gga agt ggt gga tat ggt agc aga agg ttc taa aaacagc        1215
Ser Gly Gly Gly Ser Gly Gly Tyr Gly Ser Arg Arg Phe  *
366             371             376

agaaaagggc tacagttctt agcaggagag agagcgagga gttgtcagga aagctgcagg       1275

ttactttgag acagtcgtcc caaatgcatt agaggaactg taaaaatctg ccacagaagg       1335

aacgatgatc catagtcaga aaagttactg cagcttaaac aggaaccctt cttgttcagg       1395

actgtcatag ccacagtttg caaaagtgca gctattgatt aatgcatgta gtgtcaatta       1455

gatgtcaatc ctgaggcttt tatctgttgt gcttgccttt tcctttcctt                  1505
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1822

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<210> 545
<211> 1440
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (168)..(542)

<400> 545
atttggccct cgaggccaag aattcggcac gagggtcatg aatcatgtga cggtggcttg      60

aggaggaacc tgtctttaaa gctgtccctg aagtgacagc ggagagaacc aggcagccca     120

gaaaccccag gcgtggagat tgatcctgcg agagaagggg gttcatc atg gcg gat      176
                                                    Met Ala Asp
                                                      1

gac cta aag cga ttc ttg tat aaa aag tta cca agt gtt gaa ggg ctc      224
Asp Leu Lys Arg Phe Leu Tyr Lys Lys Leu Pro Ser Val Glu Gly Leu
  4               9              14                      19

cat gcc att gtt gtg tca gat aga gat gga gta cct gtt att aaa gtg      272
His Ala Ile Val Val Ser Asp Arg Asp Gly Val Pro Val Ile Lys Val
 20              25              30                      35

gca aat gac aat gct cca gag cat gct ttg cga cct ggt ttc tta tcc      320
Ala Asn Asp Asn Ala Pro Glu His Ala Leu Arg Pro Gly Phe Leu Ser
 36              41              46                      51

act ttt gcc ctt gca aca gac caa gga agc aaa ctt gga ctt tcc aaa      368
Thr Phe Ala Leu Ala Thr Asp Gln Gly Ser Lys Leu Gly Leu Ser Lys
 52              57              62                      67

aat aaa agt atc atc tgt tac tat aac acc tac cag gtg gtt caa ttt      416
Asn Lys Ser Ile Ile Cys Tyr Tyr Asn Thr Tyr Gln Val Val Gln Phe
 68              73              78                      83

aat cgt tta cct ttg gtg gtg agt ttc ata gcc agc agc agt gcc aat      464
Asn Arg Leu Pro Leu Val Val Ser Phe Ile Ala Ser Ser Ser Ala Asn
 84              89              94                      99

aca gga cta att gtc agc cta gaa aag gaa ctt gct cca ttg ttt gaa      512
Thr Gly Leu Ile Val Ser Leu Glu Lys Glu Leu Ala Pro Leu Phe Glu
100             105             110                     115

gaa ctg aga caa gtt gtg gaa gtt tct taa t ctgacagtgg tttcagtgtg      563
Glu Leu Arg Gln Val Val Glu Val Ser  *
116             121

taccttatct tcattataac aacacaatat caatccagca atctttagac tacaataata     623

cttttatcca tgtgctcaag aaagggcccc tttttccaac ttatactaaa gagctagcat     683
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1823

atagatgtaa tttatagata gatcagttgc tatattttct ggtgtagggt ctttcttatt   743

tagtgagatc tagggatacc acagaaatgg ttcagtctat cacagctccc atggagttag   803

tctggtcacc agatatggat gagagattct attcagtgga tcagaatcaa actggtacat   863

tgatccactt gagccgttaa gtgctgccaa ttgtacaata tgcccaggct tgcagaataa   923

agccaacttt ttattgtgaa taataataag gacatatttt tcttcagatt atgttttatt   983

tctttgcatt gagtgaggaa cataaaatgg cttggtaaaa gtaataaaat cagtacaatc   1043

actaactttc ctttgtacat attattttgc agtatagatg aatattacta atcagtttga   1103

ttattctcag agggtgctgc tctttaatga aaatgaaaat tatagctaat gttttttcct   1163

caaactctgc tttctgtaac caatcagtgt tttaatgttt gtgtgttctt cataaaattt   1223

aaatacaatt cgttattctg tttccaatgt tagtatgtat gtaaacatga tagtacagcc   1283

attttttttca tatgtgagta aaaataaaat agtattttta aaaatatagt ttgagcactg   1343

tataggtcct ttttttgttc agactttttc caaaaatcta aacataatta atatactctt   1403

tcagccacat gaataaataa tgagtgtttc ttgtaaa.   1440

        <210> 546
        <211> 1288
        <212> DNA
        <213> Homo sapiens

        <220>
        <221> CDS
        <222> (95)..(928)

        <400> 546
accggcccgg aattcccggg tcgacccacg cgtccgcgcc gggcctgggg aagggacggg   60

cgcggggacc cgatgcgcgg gagcggaggc cgag   atg gct tcg gcg gga ggc   112
                                           Met Ala Ser Ala Gly Gly
                                             1

gaa gac tgc gag agc ccc gcg ccg gag gcc gac cgt ccg cac cag cgg   160
Glu Asp Cys Glu Ser Pro Ala Pro Glu Ala Asp Arg Pro His Gln Arg
  7   12   17   22

ccc ttc ctg ata ggg gtg agc ggc ggc act gcc agc ggg aag tcg acc   208
Pro Phe Leu Ile Gly Val Ser Gly Gly Thr Ala Ser Gly Lys Ser Thr
 23   28   33   38

gtg tgt gag aag atc atg gag ttg ctg gga cag aac gag gtg gaa cag   256
Val Cys Glu Lys Ile Met Glu Leu Leu Gly Gln Asn Glu Val Glu Gln
 39   44   49   54

                                    1824

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cgg cag cgg aag gtg gtc atc ctg agc cag gac agg ttc tac aag gtc        304
Arg Gln Arg Lys Val Val Ile Leu Ser Gln Asp Arg Phe Tyr Lys Val
 55              60              65                      70

ctg acg gca gag cag aag gcc aag gcc ttg aaa gga cag tac aat ttt        352
Leu Thr Ala Glu Gln Lys Ala Lys Ala Leu Lys Gly Gln Tyr Asn Phe
 71                 76               81                      86

gac cat cca gat gcc ttt gat aat gat ttg atg cac agg act ctg aag        400
Asp His Pro Asp Ala Phe Asp Asn Asp Leu Met His Arg Thr Leu Lys
 87                 92               97                     102

aac atc gtg gag ggc aaa acg gtg gag gtg ccg acc tat gat ttt gtg        448
Asn Ile Val Glu Gly Lys Thr Val Glu Val Pro Thr Tyr Asp Phe Val
103                108             113                     118

aca cac tca agg tta cca gag acc acg gtg gtc tac cct gcg gac gtg        496
Thr His Ser Arg Leu Pro Glu Thr Thr Val Val Tyr Pro Ala Asp Val
119                124             129                     134

gtt ctg ttt gag ggc atc ttg gtg ttc tac agc cag gag atc cgg gac        544
Val Leu Phe Glu Gly Ile Leu Val Phe Tyr Ser Gln Glu Ile Arg Asp
135                140             145                     150

atg ttc cac ctg cgc ctc ttc gtg gac acc gac tcc gac gtc agg ctg        592
Met Phe His Leu Arg Leu Phe Val Asp Thr Asp Ser Asp Val Arg Leu
151                156             161                     166

tct cga aga gtt ctc cgg gac gtg cgc cga ggg agg gac ctg gag cag        640
Ser Arg Arg Val Leu Arg Asp Val Arg Arg Gly Arg Asp Leu Glu Gln
167                172             177                     182

att ctg acg cag tac acc acc ttc gtg aag ccg gcc ttc gag gag ttc        688
Ile Leu Thr Gln Tyr Thr Thr Phe Val Lys Pro Ala Phe Glu Glu Phe
183                188             193                     198

tgc ctg ccg aca aag aag tat gcc gat gtg atc atc cca cga gga gtg        736
Cys Leu Pro Thr Lys Lys Tyr Ala Asp Val Ile Ile Pro Arg Gly Val
199                204             209                     214

gac aat atg gtt gcc atc aac ctg atc gtg cag cac atc cag gac att        784
Asp Asn Met Val Ala Ile Asn Leu Ile Val Gln His Ile Gln Asp Ile
215                220             225                     230

ctg aat ggt gac atc tgc aaa tgg cac cga gga ggg tcc aat ggg cgg        832
Leu Asn Gly Asp Ile Cys Lys Trp His Arg Gly Gly Ser Asn Gly Arg
231                236             241                     246

agc tac aag cgg acc ttt tct gag cca ggg gac cac cct ggg atg ctg        880
Ser Tyr Lys Arg Thr Phe Ser Glu Pro Gly Asp His Pro Gly Met Leu
247                252             257                     262

acc tct ggc aaa cgg tca cat ttg gag tcc agc agc aga ccc cac tga        928
Thr Ser Gly Lys Arg Ser His Leu Glu Ser Ser Ser Arg Pro His  *
263                268             273                     278

ggggctgccg agcctcaggg caggtctccc gcccggcatg tgtgttcagg aactgagcct      988
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1825

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ggggacgccc acccacaccc actgctatgt ggagctcaca gcctcacatg tgaacacccg    1048

tgtctgggtt gcctggggtg atcctccctc ctgcgtggtg gctgtctctg gaaagcatcc    1108

cttgccgctg ccacgggcag ccccagcccc cgtccgtcca ggctcaccca cagtagtgat    1168

gcagacgtga cgtggggggaa gggggctgag ccctgtggct gggttctgac aactgtaacg   1228

gttttgtcga gcttaggccc ctttggaggg agaatcaata ataacaaac accaactaaa     1288
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        <210> 547
        <211> 2670
        <212> DNA
        <213> Homo sapiens

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        <221> CDS
        <222> (107)..(634)

        <400> 547
gcacgagctt cccttgagtg cataggtccc ggttggtaga gggtttgagt ccgcatcgcc      60

acagctgaag gctgcgaggg actaagagca gaatatatct ttagaa    atg agt tgc      115
                                                      Met Ser Cys
                                                       1

aca att gag aag gca ctt gcc gac gct aaa gct ctt gtt gaa aga tta      163
Thr Ile Glu Lys Ala Leu Ala Asp Ala Lys Ala Leu Val Glu Arg Leu
 4               9                   14                  19

aga gat cat gac gat gca gca gaa tct ctg att gag caa acc aca gct      211
Arg Asp His Asp Asp Ala Ala Glu Ser Leu Ile Glu Gln Thr Thr Ala
 20              25                  30                  35

ctc aac aag cga gta gaa gcc atg aaa cag tat cag gaa gaa att caa      259
Leu Asn Lys Arg Val Glu Ala Met Lys Gln Tyr Gln Glu Glu Ile Gln
 36              41                  46                  51

gaa ctt aat gaa gtc gcg aga cat cgg cca cgg tcc acg tta gtt atg      307
Glu Leu Asn Glu Val Ala Arg His Arg Pro Arg Ser Thr Leu Val Met
 52              57                  62                  67

gga atc cag caa gaa aac aga caa atc aga gag ttg caa caa gaa aac      355
Gly Ile Gln Gln Glu Asn Arg Gln Ile Arg Glu Leu Gln Gln Glu Asn
 68              73                  78                  83

aaa gaa tta cgt aca tct ctg gaa gaa cat cag tcg gcc ttg gaa ctt      403
Lys Glu Leu Arg Thr Ser Leu Glu Glu His Gln Ser Ala Leu Glu Leu
 84              89                  94                  99

ata atg agc aag tac cga gaa caa atg ttt aga ttg cta atg gct agc      451
Ile Met Ser Lys Tyr Arg Glu Gln Met Phe Arg Leu Leu Met Ala Ser
100             105                 110                 115
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1826

```
aaa aaa gat gat ccg ggt ata ata atg aag tta aaa gag cag cac tcc      499
Lys Lys Asp Asp Pro Gly Ile Ile Met Lys Leu Lys Glu Gln His Ser
116             121             126             131

aag gaa ctg caa gca cat gtt gac cag ata act gaa atg gca gca gta      547
Lys Glu Leu Gln Ala His Val Asp Gln Ile Thr Glu Met Ala Ala Val
132             137             142             147

atg agg aag cca ttg aaa ttg acg agc aac agg gtt gca agg aac aag      595
Met Arg Lys Pro Leu Lys Leu Thr Ser Asn Arg Val Ala Arg Asn Lys
148             153             158             163

aac gaa tat ttc aac ttg aac aag aaa aca aag gct tga gagagatcct      644
Asn Glu Tyr Phe Asn Leu Asn Lys Lys Thr Lys Ala  *
164             169             174

tcaaataact cgagaatcat ttttgaacct aaggaaagat gatgcgtcgg aaagtacttc      704

tttgtcagca ttagtgacca acagtgattt gagtctgagg aagagctgaa gagtttctga      764

gtctgtgagc ttcttacatg gctccaaatg gtcaaataag tgaatgaatg aatggacaga      824

aaattcaatc ctttattttt ttctctgtaa atatgtacag tgcacgggct atgagatagc      884

aacaaaaaat gcatagttaa tggtcataga ctttattcca aaacataatt ggaaaataga      944

aactgagcca ttgccaaatg gtaaagaaat gaaaagtttt cacagtgact actgaatata      1004

ccaagagctt ttggcagtac tgctggcttt ctgggtgatt aattaggtaa acttgaatat      1064

tcccagtaaa tgtttgagaa tgcataaaat tataccaatt taaaaatata aatttttgcc      1124

actgttttgt gaacggagga tttgtacgct aaatttcatc cttatttggc gtcaaagttg      1184

atgcaaagtt tatgtaccat gagacttcta gtgattgcct actttcacat ttatttaaat      1244

ttttgtgaaa gaaaatacag ttttaaaggc tataggaatg tgttatatgt accttaaaca      1304

gataatttaa ttttagcaat ttatcataac tgatacttag ctaacaattg tccataactt      1364

gtttaagtgt aagaaatacc atttcaggaa tgaaaagaa ggaatactac tttctaagaa      1424

agaagatctt ataatagaca tatttagtag gttaaactac tcctttgaaa gaataagttt      1484

tggttcaaag tcaataatga agacgagatt tgttttctc ttctctggct gatttttaag      1544

gatattatgt agttcattta gttaacagaa ttgaaatgtt tgatatggca agataggtat      1604

ggtaatttca aagtgaattg ggaattcctc tggctcatag aacccttttt tttttccttt      1664

aagtattctt gagatacaaa aaaaaaagt aaatacaatt tcaaaaaaaa aagttccgga      1724

tctgttttta agctccatct ggtcctcata acctgcaaga tttttcttaa aaccttteag      1784

ctgaaagtgg gggtaaaggt ggagtaatct gtggatttgt ttctgttgtc ttttaaaatg      1844
```

1827

```
tcaaatatat aatatgtaat ttttttaaaa accaccagat acagaaatgt gctttaacat    1904

cagttgaaac ctaaatttc ttatgttgtg gtgattgtat taaaaaggga taaaagaaga     1964

gtgtcaaaca tggttaaata tattgtactc atttatgttg aatacgtatt aaaattaaga    2024

caagtggaaa attatacttt gagtatataa tttgttaaat attactttat atggtaattt    2084

tatgtataat ttcatatatt ggtaaaattc aaaactacac ttgagaattt ttttatctta    2144

agtttggggt gaatggggtg gatgagactg attgaataga aaagggctaa tggcccaaac    2204

attatataga tttctttttt tcagtcagag gccttatttg atattttata aataaatgac    2264

agtttttatt tttaaacttt ttattgtttt tgggaaagta ttccttaatt taatgacaca    2324

ttcattcaga tacttcttat ccctgctaat aaaggaaatc tatttcaagc tacaccattg    2384

agattaagtc tgaggcagtt cattgaggca gctctactat aaaagcttac ttgataaata    2444

attatttttg taaacaagtt gggttaactt attcttcgtc tttttgcttg gatatgaatt    2504

taaggtcttc atgtttaaag acatttactt tgttatttag tgacacattt ccatcctatt    2564

tttttttttt tttttggttg ttgttaaaca gaaccttaag tttatgtttg aggtatgtac    2624

tgcataggaa cctatttat tattaaagat gaatgattaa aattgg                   2670
```

<210> 548
<211> 1764
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (365)..(916)

<400> 548
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atccgcttcg ccggaacaat cctgtgagtt tatgatatct gctatacaga tgaggataac      60

agaagttgac taacttgccc aagtcacaag tttgtaaaga tggatctggg atttaaaccc     120

agtgagtgat ggattggaac tgagaccgaa atataatgga attttacatt gcttgactac     180

catttggaaa cttgatggac tacggggact ttatcaagga gtaaccccaa atatatgggg     240

tgcaggttta tcctggggac tctactttt cttttacaat gccatcaagt catataaaac      300

agaaggaaga gctgaacgtt tagaggcaac agaatacctt gtctcagctg ctgaagctgg     360

agcc atg acc ctc tgc att aca aac cca tta tgg gta aca aaa act cgc      409
     Met Thr Leu Cys Ile Thr Asn Pro Leu Trp Val Thr Lys Thr Arg
      1               5                  10
```

1828

```
ctt atg tta cag tat gat gct gtt gtt aac tcc cca cac cga caa tat          457
Leu Met Leu Gln Tyr Asp Ala Val Val Asn Ser Pro His Arg Gln Tyr
 16              21              26                      31

aaa gga atg ttt gat aca ctt gtg aaa ata tat aag tat gaa ggt gtg          505
Lys Gly Met Phe Asp Thr Leu Val Lys Ile Tyr Lys Tyr Glu Gly Val
 32              37              42                      47

cgt gga tta tat aag gga ttt gtt cct ggg ctg ttt gga aca tcg cat          553
Arg Gly Leu Tyr Lys Gly Phe Val Pro Gly Leu Phe Gly Thr Ser His
 48              53              58                      63

ggt gcc ctt cag ttt atg gca tat gaa ttg ctg aag ttg aag tac aac          601
Gly Ala Leu Gln Phe Met Ala Tyr Glu Leu Leu Lys Leu Lys Tyr Asn
 64              69              74                      79

cag cat atc aat aga tta cca gaa gcc cag ttg agc aca gta gaa tat          649
Gln His Ile Asn Arg Leu Pro Glu Ala Gln Leu Ser Thr Val Glu Tyr
 80              85              90                      95

ata tct gtt gca gca cta tcc aaa ata ttt gct gtc gca gca aca tac          697
Ile Ser Val Ala Ala Leu Ser Lys Ile Phe Ala Val Ala Ala Thr Tyr
 96             101             106                     111

cca tat caa gtc gta aga gct cgt ctt cag gat caa cac atg ttt tac          745
Pro Tyr Gln Val Val Arg Ala Arg Leu Gln Asp Gln His Met Phe Tyr
112             117             122                     127

agt ggt gta ata gat gta atc aca aag aca tgg agg aaa gaa ggc gtc          793
Ser Gly Val Ile Asp Val Ile Thr Lys Thr Trp Arg Lys Glu Gly Val
128             133             138                     143

ggt gga ttt tac aag gga att gct cct aat ttg att aga gtg act cca          841
Gly Gly Phe Tyr Lys Gly Ile Ala Pro Asn Leu Ile Arg Val Thr Pro
144             149             154                     159

gcc tgc tgt att acc ttt gtg gta tat gaa aac gtc tca cat ttt tta          889
Ala Cys Cys Ile Thr Phe Val Val Tyr Glu Asn Val Ser His Phe Leu
160             165             170                     175

ctt gac ctt aga gaa aag aga aag taa gctca aagaggacaa ttccagtata          941
Leu Asp Leu Arg Glu Lys Arg Lys  *
176             181

tctgcccaag gcagcaacaa gctcttttgt gtttaaggca taaagaaga attctgcata        1001

gaaacatggc tcatattcga aattgctcta tagtcattag aagccagaga actgctaagt       1061

ctcctgcaat gttttctgc ttttgcctt ccccatatat atggaacttg gctacctctg        1121

cctgaaatgg ctgccatcaa cacaatgtta aaactgacac gaagtataga gtttcacaga       1181

tttctacgtt ttattggtgg aagctgattt gcaacatttg ctaaatggat tagatgaatg      1241

tacttctttt tgtgagctta cttgcctgga ttgctttaaa attaaccttt gtgcaatacc      1301

aagaaaatag ctctttaaaa gaatgtcttt gtatgtctca aggtaaatta aggatttact      1361
```

```
gaataaggtg ttgaccaaat ccagaccatt ttattttatt tttttattta tttatttttt   1421

gagatggagt cttgctttgt cgcccaggct ggagtgcagt ggcgtgatct cagctcactg   1481

caacctccac ctcccgggtt cacgccattc tcctgcctca gcctcctgag tagctgggac   1541

tacaggcacc tgccaccacg cctggctaac ttttttttat attttgagta gaaatggggt   1601

ttcaccatgt tagccaggat gggctcaatc tcctgacctt gtgatccgcc tgccttggcc   1661

tcccaaagtg ctgggattac aggcgtgagc cactgcgcct ggccagacca ttttagaatt   1721

gggaaattgt agtgagaaaa aatgcactgt aaatatgctt tat                     1764
```

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      <210> 549
      <211> 2482
      <212> DNA
      <213> Homo sapiens

      <220>
      <221> CDS
      <222> (50)..(2164)

      <400> 549
aaggatcctt aattaaatta atccccccccc cccccccggg gagtacgac    atg gcg       55
                                                         Met Ala
                                                          1


cgc gag ctg cgg gcg ctg ctg ctg tgg ggc cgc cgc ctg cgg cct ttg      103
Arg Glu Leu Arg Ala Leu Leu Leu Trp Gly Arg Arg Leu Arg Pro Leu
 3               8                  13                  18


ctg cgg gcg ccg gcg ctg gcg gcc gtg ccg gga gga aaa cca att ctg      151
Leu Arg Ala Pro Ala Leu Ala Ala Val Pro Gly Gly Lys Pro Ile Leu
 19              24                  29                  34


tgt cct cgg agg acc aca gcc cag ttg ggc ccc agg cga aac cca gcc      199
Cys Pro Arg Arg Thr Thr Ala Gln Leu Gly Pro Arg Arg Asn Pro Ala
 35              40                  45                  50


tgg agc ttg cag gca gga cga ctg ttc agc acg cag acc gcc gag gac      247
Trp Ser Leu Gln Ala Gly Arg Leu Phe Ser Thr Gln Thr Ala Glu Asp
 51              56                  61                  66


aag gag gaa ccc ctg cac tcg att atc agc agc aca gag agc gtg cag      295
Lys Glu Glu Pro Leu His Ser Ile Ile Ser Ser Thr Glu Ser Val Gln
 67              72                  77                  82


ggt tcc act tcc aaa cat gag ttc cag gcc gag aca aag aag ctt ttg      343
Gly Ser Thr Ser Lys His Glu Phe Gln Ala Glu Thr Lys Lys Leu Leu
 83              88                  93                  98


gac att gtt gcc cgg tcc ctg tac tca gaa aaa gag gtg ttt ata cgg      391
```

1830

```
Asp Ile Val Ala Arg Ser Leu Tyr Ser Glu Lys Glu Val Phe Ile Arg
 99             104             109             114

gag ctg atc tcc aat gcc agc gat gcc ttg gaa aaa ctg cgt cac aaa       439
Glu Leu Ile Ser Asn Ala Ser Asp Ala Leu Glu Lys Leu Arg His Lys
115             120             125             130

ctg gtg tct gac ggc caa gca ctg cca gaa atg gag att cac ttg cag       487
Leu Val Ser Asp Gly Gln Ala Leu Pro Glu Met Glu Ile His Leu Gln
131             136             141             146

acc aat gcc gag aaa ggc acc atc acc atc cag gat act ggt atc ggg       535
Thr Asn Ala Glu Lys Gly Thr Ile Thr Ile Gln Asp Thr Gly Ile Gly
147             152             157             162

atg aca cag gaa gag ctg gtg tcc aac ctg ggg acg att gcc aga tcg       583
Met Thr Gln Glu Glu Leu Val Ser Asn Leu Gly Thr Ile Ala Arg Ser
163             168             173             178·

ggg tca aag gcc ttc ctg gat gct ctg cag aac cag gct gag gcc agc       631
Gly Ser Lys Ala Phe Leu Asp Ala Leu Gln Asn Gln Ala Glu Ala Ser
179             184             189             194

agc aag atc atc ggc cag ttt gga gtg ggt ttc tac tca gct ttc atg       679
Ser Lys Ile Ile Gly Gln Phe Gly Val Gly Phe Tyr Ser Ala Phe Met
195             200             205             210

gtg gct gac aga gtg gag gtc tat tcc cgc tcg gca gcc ccg ggg agc       727
Val Ala Asp Arg Val Glu Val Tyr Ser Arg Ser Ala Ala Pro Gly Ser
211             216             221             226

ctg ggt tac cag tgg ctt tca gat ggt tct gga gtg ttt gaa atc gcc       775
Leu Gly Tyr Gln Trp Leu Ser Asp Gly Ser Gly Val Phe Glu Ile Ala
227             232             237             242

gaa gct tcg gga gtt aga acc ggg aca aaa atc atc atc cac ctg aaa       823
Glu Ala Ser Gly Val Arg Thr Gly Thr Lys Ile Ile Ile His Leu Lys
243             248             253             258

tcc gac tgc aag gag ttt tcc agc gag gcc cgg gtg cga gat gtg gta       871
Ser Asp Cys Lys Glu Phe Ser Ser Glu Ala Arg Val Arg Asp Val Val
259             264             269             274

acg aag tac agc aac ttc gtc agc ttc ccc ttg tac ttg aat gga agg       919
Thr Lys Tyr Ser Asn Phe Val Ser Phe Pro Leu Tyr Leu Asn Gly Arg
275             280             285             290

cgg atg aac acc ttg cag gcc atc tgg atg atg gac ccc aag gat gtc       967
Arg Met Asn Thr Leu Gln Ala Ile Trp Met Met Asp Pro Lys Asp Val
291             296             301             306

cgt gag tgg caa cat gag gag ttc tac cgc tac gtc gcg cag gct cac      1015
Arg Glu Trp Gln His Glu Glu Phe Tyr Arg Tyr Val Ala Gln Ala His
307             312             317             322
/

gac aag ccc cgc tac acc ctg cac tat aag acg gac gca ccg ctc aac      1063
Asp Lys Pro Arg Tyr Thr Leu His Tyr Lys Thr Asp Ala Pro Leu Asn
```

1831

```
atc cgc agc atc ttc tac gtg ccc gac atg aaa ccg tcc atg ttt gat     1111
Ile Arg Ser Ile Phe Tyr Val Pro Asp Met Lys Pro Ser Met Phe Asp
339                    344                    349                    354

gtg agc cgg gag ctg ggc tcc agc gtt gca ctg tac agc cgc aaa gtc     1159
Val Ser Arg Glu Leu Gly Ser Ser Val Ala Leu Tyr Ser Arg Lys Val
355                    360                    365                    370

ctc atc cag acc aag gcc acg gac atc ctg ccc aag tgg ctg cgc ttc     1207
Leu Ile Gln Thr Lys Ala Thr Asp Ile Leu Pro Lys Trp Leu Arg Phe
371                    376                    381                    386

atc cga ggt gtg gtg gac agt gag gac att ccc ctg aac ctc agc cgg     1255
Ile Arg Gly Val Val Asp Ser Glu Asp Ile Pro Leu Asn Leu Ser Arg
387                    392                    397                    402

gag ctg ctg cag gag agc gca ctc atc agg aaa ctc cgg gac gtt tta     1303
Glu Leu Leu Gln Glu Ser Ala Leu Ile Arg Lys Leu Arg Asp Val Leu
403                    408                    413                    418

cag cag agg ctg atc aaa ttc ttc att gac cag agt aaa aaa gat gct     1351
Gln Gln Arg Leu Ile Lys Phe Phe Ile Asp Gln Ser Lys Lys Asp Ala
419                    424                    429                    434

gag aag tat gca aag ttt ttt gaa gat tac ggc ctg ttc atg cgg gag     1399
Glu Lys Tyr Ala Lys Phe Phe Glu Asp Tyr Gly Leu Phe Met Arg Glu
435                    440                    445                    450

ggc att gtg acc gcc acc gag cag gag gtc aag gag gac ata gca aag     1447
Gly Ile Val Thr Ala Thr Glu Gln Glu Val Lys Glu Asp Ile Ala Lys
451                    456                    461                    466

ctg ctg cgc tac gag tcc tcg gcg ctg ccc tcc ggg cag cta acc agc     1495
Leu Leu Arg Tyr Glu Ser Ser Ala Leu Pro Ser Gly Gln Leu Thr Ser
467                    472                    477                    482

ctc tca gaa tac gcc agc cgc atg cgg gcc ggc acc cgc aac atc tac     1543
Leu Ser Glu Tyr Ala Ser Arg Met Arg Ala Gly Thr Arg Asn Ile Tyr
483                    488                    493                    498

tac ctg tgc gcc ccc aac cgt cac ctg gca gag cac tca ccc tac tat     1591
Tyr Leu Cys Ala Pro Asn Arg His Leu Ala Glu His Ser Pro Tyr Tyr
499                    504                    509                    514

gag gcc atg aag aag aaa gac aca gag gtt ctc ttc tgc ttt gag cag     1639
Glu Ala Met Lys Lys Lys Asp Thr Glu Val Leu Phe Cys Phe Glu Gln
515                    520                    525                    530

ttt gat gag ctc acc ctg ctg cac ctt cgt gag ttt gac aag aag aag     1687
Phe Asp Glu Leu Thr Leu Leu His Leu Arg Glu Phe Asp Lys Lys Lys
531                    536                    541                    546

ctg atc tct gtg gag acg gac ata gtc gtg gat cac tac aag gag gag     1735
Leu Ile Ser Val Glu Thr Asp Ile Val Val Asp His Tyr Lys Glu Glu
547                    552                    557                    562
```

```
aag ttt gag gac agg tcc cca gcc gcc gag tgc cta tca gag aag gag        1783
Lys Phe Glu Asp Arg Ser Pro Ala Ala Glu Cys Leu Ser Glu Lys Glu
563             568             573             578

acg gag gag ctc atg gcc tgg atg aga aat gtg ctg ggg tcg cgt gtc        1831
Thr Glu Glu Leu Met Ala Trp Met Arg Asn Val Leu Gly Ser Arg Val
579             584             589             594

acc aac gtg aag gtg acc ctc cga ctg gac acc cac cct gcc atg gtc        1879
Thr Asn Val Lys Val Thr Leu Arg Leu Asp Thr His Pro Ala Met Val
595             600             605             610

acc gtg ctg gag atg ggg gct gcc cgc cac ttc ctg cgc atg cag cag        1927
Thr Val Leu Glu Met Gly Ala Ala Arg His Phe Leu Arg Met Gln Gln
611             616             621             626

ctg gcc aag acc cag gag gag cgc gca cag ctc ctg cag ccc acg ctg        1975
Leu Ala Lys Thr Gln Glu Glu Arg Ala Gln Leu Leu Gln Pro Thr Leu
627             632             637             642

gag atc aac ccc agg cac gcg ctc atc aag aag ctg aat cag ctg cgc        2023
Glu Ile Asn Pro Arg His Ala Leu Ile Lys Lys Leu Asn Gln Leu Arg
643             648             653             658

gca agc gag cct ggc ctg gct cag ctg ctg gtg gat cag ata tac gag        2071
Ala Ser Glu Pro Gly Leu Ala Gln Leu Leu Val Asp Gln Ile Tyr Glu
659             664             669             674

aac gcc atg att gct gct gga ctt gtt gac gac cct agg gcc atg gtg        2119
Asn Ala Met Ile Ala Ala Gly Leu Val Asp Asp Pro Arg Ala Met Val
675             680             685             690

ggc cgc ttg aat gag ctg ctt gtc aag gcc ctg gag cga cac tga cag        2167
Gly Arg Leu Asn Glu Leu Leu Val Lys Ala Leu Glu Arg His *
691             696             701

ccagggggcc agaaggactg acaccacaga tgacagcccc acctccttga gctttattta        2227

cctaaattta aaggtatttc ttaacccgag tgtgtgttgg ctttttttc tgggtcctgt         2287

ggcaggatgg gtcctctctc cctgcagttc aactggtgtg gggaggggct gctcacttca        2347

gcatcaccct cactggatag tggtcactga tggcttgggc tgcaggcaag tgggcacagg        2407

gtctggctga gcctacctga gctcctccct cgtgccgaac tgttcgtcga gggccaaatt        2467

ccatatagtg cccgt                                                         2482
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<210> 550
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<212> DNA
<213> Homo sapiens

1833

<220>
<221> CDS
<222> (64)..(759)

<220>
<221> misc_feature
<222> (1)...(1187)
<223> n = a,t,c or g

<400> 550
aatacaagct acttgttctt tttgcaggat cccatcgatt cgaattcggc acgagcgcga   60

```
acc  atg gcc ggc atg gtg gac ttc cag gat gag gag cag gtc aag tcc      108
     Met Ala Gly Met Val Asp Phe Gln Asp Glu Glu Gln Val Lys Ser
      1           5                   10

ttt ttg gag aac atg gag gtg gag tgc aac tac cac tgc tac cac gag      156
Phe Leu Glu Asn Met Glu Val Glu Cys Asn Tyr His Cys Tyr His Glu
 16              21                  26                  31

aag gac ccg gac ggt tgc tat cgg ctg gtg gac tat ttg gaa ggg atc      204
Lys Asp Pro Asp Gly Cys Tyr Arg Leu Val Asp Tyr Leu Glu Gly Ile
 32              37                  42                  47

cgg aag aat ttt gat gag gct gcc aag gtg ttg aag ttt aac tgt gaa      252
Arg Lys Asn Phe Asp Glu Ala Ala Lys Val Leu Lys Phe Asn Cys Glu
 48              53                  58                  63

gag aac cag cac agt gat agc tgc tac aaa ctg ggg gcc tac tat gtg      300
Glu Asn Gln His Ser Asp Ser Cys Tyr Lys Leu Gly Ala Tyr Tyr Val
 64              69                  74                  79

act gga aaa ggt ggt ctg acc cag gac ctg aaa gct gcc gcc agg tgc      348
Thr Gly Lys Gly Gly Leu Thr Gln Asp Leu Lys Ala Ala Ala Arg Cys
 80              85                  90                  95

ttt ttg atg gcg tgt gag aag cct gga aag aag tca ata gca gca tgt      396
Phe Leu Met Ala Cys Glu Lys Pro Gly Lys Lys Ser Ile Ala Ala Cys
 96              101                 106                 111

cac aac gtt ggc ctc ctg gca cat gat gga cag gtt aat gag gat ggc      444
His Asn Val Gly Leu Leu Ala His Asp Gly Gln Val Asn Glu Asp Gly
112             117                 122                 127

cag cct gac ttg gga aag gcc agg gac tac tac aca agg gcc tgt gat      492
Gln Pro Asp Leu Gly Lys Ala Arg Asp Tyr Tyr Thr Arg Ala Cys Asp
128             133                 138                 143

ggt ggc tat act tcc agt tgc ttc aac ctc agt gcc atg ttc ctg cag      540
Gly Gly Tyr Thr Ser Ser Cys Phe Asn Leu Ser Ala Met Phe Leu Gln
144             149                 154                 159

ggt gcc cca ggc ttt ccc aag gac atg gac ctg gca tgt aaa tac tcc      588
Gly Ala Pro Gly Phe Pro Lys Asp Met Asp Leu Ala Cys Lys Tyr Ser
160             165                 170                 175

atg aaa gcc tgt gac ctg ggt cat atc tgg gcc tgt gcc aat gcc agt      636
```

```
Met Lys Ala Cys Asp Leu Gly His Ile Trp Ala Cys Ala Asn Ala Ser
176             181                 186             191

cgc atg tac aag ctg ggg gat ggt gtt gat aag gat gag gcc aag gcc     684
Arg Met Tyr Lys Leu Gly Asp Gly Val Asp Lys Asp Glu Ala Lys Ala
192             197                 202             207

gag gtg cta aaa aat cga gcc cag cag cta cac aga gaa cag cag aaa     732
Glu Val Leu Lys Asn Arg Ala Gln Gln Leu His Arg Glu Gln Gln Lys
208             213                 218             223

ggt gtc caa ccc tta aca ttt ggg taa tgtgg tccaccctcc ctcccaggca     784
Gly Val Gln Pro Leu Thr Phe Gly  *
224             229


acaaactgct tgaggctggc agctcctgtt tctgaagact gatgcagccc ttgaaggtca     844

acctgctgga gcaaaaaaac ttgggacttg aatttgtagc tccatttaca tggatccatt     904

gccccagcta ctggagtata gcctacaatg tttatttcag tcaatattcc tttatctggg     964

tgttctgtac aatgtttatt acagtcaata ttccttcatc tggatgttct gtgaagatag    1024

ccatgtttat gggggtctta gttttcaaac tctggcaact ctgtgaaaaa taggagcaaa    1084

ctanagagcc ctggagattg gtggtaggga agggaggata acangaagtt tgaaaaatta    1144

gcagccccgg ggcctaaagg aatcagctgt catcattttc atc                     1187



    <210> 551
    <211> 585
    <212> DNA
    <213> Homo sapiens

    <220>
    <221> CDS
    <222> (67)..(510)

    <400> 551
tagaccacat agggaatttg ccctcgagg caagaattcg gcacgaggct caggacaatc       60

tccagc    atg gcc tgg tct cct ctc ctc ctc act ctc ctc gct cac tgc     108
          Met Ala Trp Ser Pro Leu Leu Leu Thr Leu Leu Ala His Cys
            1           5                   10

aca ggg tcc tgg gcc cag tct gtg ctg acg cag ccg ccc tca gtg tct     156
Thr Gly Ser Trp Ala Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser
15              20                  25                  30

ggg gcc cca ggg cag agg gtc acc atc tcc tgc act ggg agc agc tcc     204
Gly Ala Pro Gly Gln Arg Val Thr Ile Ser Cys Thr Gly Ser Ser Ser
31              36                  41                  46

aac atc ggg gca ggt tat gat gta cac tgg tac cag caa ctt cca gga     252
```

1835

```
Asn Ile Gly Ala Gly Tyr Asp Val His Trp Tyr Gln Gln Leu Pro Gly
 47          52              57          60              62

aca gcc ccc aaa ctc ctc atc tat ggt aac agc aat cgg ccc tca ggg      300
Thr Ala Pro Lys Leu Leu Ile Tyr Gly Asn Ser Asn Arg Pro Ser Gly
 63              68              73              78

gtc cct gac cga ttc tct ggc tcc aag tct ggc acc tca gcc tcc ctg      348
Val Pro Asp Arg Phe Ser Gly Ser Lys Ser Gly Thr Ser Ala Ser Leu
 79              84              89              94

gcc atc act ggg ctc cag gct gag gat gag gct gat tat tac tgc cag      396
Ala Ile Thr Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gln
 95             100             105             110

tcc tat gac agc agc ctg agt ggt tct gtg gta ttc ggc gga ggg acc      444
Ser Tyr Asp Ser Ser Leu Ser Gly Ser Val Val Phe Gly Gly Gly Thr
111             116             121             126

aag ctg acc gtc cta ggt cag ccc aag gct gcc ccc tcg gtc act ctg      492
Lys Leu Thr Val Leu Gly Gln Pro Lys Ala Ala Pro Ser Val Thr Leu
127             132             137             142

ttc ccg ccc ctc ctc tga ggagct tcaagccaac aaggccacac tggtgtgtct      546
Phe Pro Pro Leu Leu  *
143             148

cataagtgac ttctacccgg gagccgtgac agtggcctg                            585
```

    <210> 552
    <211> 3582
    <212> DNA
    <213> Homo sapiens

    <220>
    <221> CDS
    <222> (392)..(2647)

    <220>
    <221> misc_feature
    <222> (1)...(3582)
    <223> n = a,t,c or g

    <400> 552
cgagactcaa gaaaatcctg agatcagtac gaccgtgcga aagtnccgta tcgacctacg   60

cgtccggcaa gacctcatct gctggtgtac ctcatccttt tagcccctct ttgatgtttg   120

ctgcaaacgt cacccagctc ctggggcaca ctggactccc agatgagctt gtcctggatt   180

tgcagggagc ctggctccct aaacctttg gccagatccc cacaggggaa ttgtgcaggt   240

gcgccctccc cagatcccca gctggtattg gaatcacacc aactgtcaca catggggagg   300

```
gcagctgcac ccagccaccc tctgacttct ctcctgccac agattggcca tctgcaagct        360

tcccttctcc gtggagagca ggaagacagt c   atg gga cct cag gga gcc agg        412
                                     Met Gly Pro Gln Gly Ala Arg
                                      1                   5

aga cag gct ttc ttg gca ttt ggg gat gtc act gtg gat ttc acc cag        460
Arg Gln Ala Phe Leu Ala Phe Gly Asp Val Thr Val Asp Phe Thr Gln
 8               13                  18                  23

aag gaa tgg agg ctg ctg agc cct gct cag agg gcc ctg tac agg gag        508
Lys Glu Trp Arg Leu Leu Ser Pro Ala Gln Arg Ala Leu Tyr Arg Glu
 24              29                  34                  39

gtg aca ctg gag aac tac agc cac ctg gtc tca cta gga att ctc cat        556
Val Thr Leu Glu Asn Tyr Ser His Leu Val Ser Leu Gly Ile Leu His
 40              45                  50                  55

tct aaa cca gaa ctc atc agg cgg cta gag caa ggg gaa gtg ccc tgg        604
Ser Lys Pro Glu Leu Ile Arg Arg Leu Glu Gln Gly Glu Val Pro Trp
 56              61                  66                  71

gga gaa gag aga aga cgc cgg cca ggc ccc tgt gca gga ata tat gca        652
Gly Glu Glu Arg Arg Arg Arg Pro Gly Pro Cys Ala Gly Ile Tyr Ala
 72              77                  82                  87

gaa cat gtc ctg cgg ccc aag aat ctt gga ctt gca cat cag agg caa        700
Glu His Val Leu Arg Pro Lys Asn Leu Gly Leu Ala His Gln Arg Gln
 88              93                  98                  103

cag caa cta caa ttt tct gat caa agc ttc cag agt gac aca gct gaa        748
Gln Gln Leu Gln Phe Ser Asp Gln Ser Phe Gln Ser Asp Thr Ala Glu
 104             109                 114                 119

ggt caa gag aaa gaa aaa agc act aag ccc atg gca ttt tcc agc cca        796
Gly Gln Glu Lys Glu Lys Ser Thr Lys Pro Met Ala Phe Ser Ser Pro
 120             125                 130                 135

ccc cta aga cat gca gta agc tca agg agg agg aac agt gta gtg gaa        844
Pro Leu Arg His Ala Val Ser Ser Arg Arg Arg Asn Ser Val Val Glu
 136             141                 146                 151

ata gag tct agt caa ggc cag agg gaa aat cct aca gaa ata gac aaa        892
Ile Glu Ser Ser Gln Gly Gln Arg Glu Asn Pro Thr Glu Ile Asp Lys
 152             157                 162                 167

gta ttg aaa gga ata gaa aat tca aga tgg gga gca ttc aag tgt gca        940
Val Leu Lys Gly Ile Glu Asn Ser Arg Trp Gly Ala Phe Lys Cys Ala
 168             173                 178                 183

gag cgt ggg caa gac ttc agc cgg aag atg atg gta atc ata cac aaa        988
Glu Arg Gly Gln Asp Phe Ser Arg Lys Met Met Val Ile Ile His Lys
 184             189                 194                 199

aaa gca cat tcc agg cag aaa ctt ttt aca tgc agg gag tgt cac cag        1036
Lys Ala His Ser Arg Gln Lys Leu Phe Thr Cys Arg Glu Cys His Gln
 200             205                 210                 215
```

1837

```
ggc ttt aga gat gag tca gca ttg ctc ttg cac cag aac aca cac aca     1084
Gly Phe Arg Asp Glu Ser Ala Leu Leu Leu His Gln Asn Thr His Thr
216             221             226                 231

gga gag aag tcc tat gtg tgc agt gtg tgt ggg cga ggc ttc agc ctc     1132
Gly Glu Lys Ser Tyr Val Cys Ser Val Cys Gly Arg Gly Phe Ser Leu
232             237             242                 247

aag gcc aac ctc ctc aga cac cag agg aca cac tca gga gag aag cct     1180
Lys Ala Asn Leu Leu Arg His Gln Arg Thr His Ser Gly Glu Lys Pro
248             253             258                 263

ttt ctg tgc aag gtg tgt gga cga ggc tat acc agt aag tca tac ctc     1228
Phe Leu Cys Lys Val Cys Gly Arg Gly Tyr Thr Ser Lys Ser Tyr Leu
264             269             274                 279

act gtg cat gag aga aca cac aca gga gag aag cct tat gaa tgc cag     1276
Thr Val His Glu Arg Thr His Thr Gly Glu Lys Pro Tyr Glu Cys Gln
280             285             290                 295

gag tgt ggg cga agg ttt aac gat aag tcc tca tac aac aag cac ttg     1324
Glu Cys Gly Arg Arg Phe Asn Asp Lys Ser Ser Tyr Asn Lys His Leu
296             301             306                 311

aag gcg cat tca ggg gag aag cct ttt gtg tgc aag gag tgt ggg cga     1372
Lys Ala His Ser Gly Glu Lys Pro Phe Val Cys Lys Glu Cys Gly Arg
312             317             322                 327

ggc tat act aat aag tca tac ttc gtt gtg cac aag aga ata cac tca     1420
Gly Tyr Thr Asn Lys Ser Tyr Phe Val Val His Lys Arg Ile His Ser
328             333             338                 343

gga gag aag cct tac aga tgc cag gag tgt ggc cga ggc ttt agc aat     1468
Gly Glu Lys Pro Tyr Arg Cys Gln Glu Cys Gly Arg Gly Phe Ser Asn
344             349             354                 359

aag tca cac ctt atc aca cac cag agg aca cac tca ggg gag aag ccc     1516
Lys Ser His Leu Ile Thr His Gln Arg Thr His Ser Gly Glu Lys Pro
360             365             370                 375

ttt gcg tgc agg cag tgt aag caa agt ttt agc gtg aaa gga agt ctc     1564
Phe Ala Cys Arg Gln Cys Lys Gln Ser Phe Ser Val Lys Gly Ser Leu
376             381             386                 391

ctc aga cac cag aga aca cac tca ggg gag aag cct ttt gtg tgc aag     1612
Leu Arg His Gln Arg Thr His Ser Gly Glu Lys Pro Phe Val Cys Lys
392             397             402                 407

gat tgt gag cga agc ttt agc caa aag tca act ctt gtc tac cac cag     1660
Asp Cys Glu Arg Ser Phe Ser Gln Lys Ser Thr Leu Val Tyr His Gln
408             413             418                 423

aga aca cac tca ggg gag aaa cct ttt gtt tgt aga gaa tgt ggg caa     1708
Arg Thr His Ser Gly Glu Lys Pro Phe Val Cys Arg Glu Cys Gly Gln
424             429             434                 439
```

1838

```
gga ttt att cag aag tca acc ctt gtg aaa cat cag atc aca cac tca        1756
Gly Phe Ile Gln Lys Ser Thr Leu Val Lys His Gln Ile Thr His Ser
440             445             450             455

gag gag aag cct ttt gtg tgc aag gac tgt gga cga ggc ttt atc caa        1804
Glu Glu Lys Pro Phe Val Cys Lys Asp Cys Gly Arg Gly Phe Ile Gln
456             461             466             471

aag tca acc ttc gct tta cac cag agg aca cac tca gag gag aag cct        1852
Lys Ser Thr Phe Ala Leu His Gln Arg Thr His Ser Glu Glu Lys Pro
472             477             482             487

tat gga tgt cgg gag tgt ggg cgt agg ttt cgg gat aag tcc tcc tat        1900
Tyr Gly Cys Arg Glu Cys Gly Arg Arg Phe Arg Asp Lys Ser Ser Tyr
488             493             498             503

aac aag cac ctg agg gca cac ttg ggt gag aaa cgt ttt ttc tgc agg        1948
Asn Lys His Leu Arg Ala His Leu Gly Glu Lys Arg Phe Phe Cys Arg
504             509             514             519

gat tgt ggg cga ggc ttt acc ttg aag cca aat ctc acc ata cat cag        1996
Asp Cys Gly Arg Gly Phe Thr Leu Lys Pro Asn Leu Thr Ile His Gln
520             525             530             535

agg aca cac tca gga gag aag ccc ttc atg tgc aag cag tgt gag aaa        2044
Arg Thr His Ser Gly Glu Lys Pro Phe Met Cys Lys Gln Cys Glu Lys
536             541             546             551

agt ttt agt ttg aag gca aat ctt ctt aga cat cag tgg aca cac tcg        2092
Ser Phe Ser Leu Lys Ala Asn Leu Leu Arg His Gln Trp Thr His Ser
552             557             562             567

ggg gaa agg cca ttt aat tgc aag gat tgc ggg cga ggc ttc atc cta        2140
Gly Glu Arg Pro Phe Asn Cys Lys Asp Cys Gly Arg Gly Phe Ile Leu
568             573             578             583

aaa tca act ctc ctc ttc cac cag aag aca cac tca ggg gag aag cct        2188
Lys Ser Thr Leu Leu Phe His Gln Lys Thr His Ser Gly Glu Lys Pro
584             589             594             599

ttc atc tgt agt gaa tgt ggg caa gga ttt atc tgg aag tca aat ctt        2236
Phe Ile Cys Ser Glu Cys Gly Gln Gly Phe Ile Trp Lys Ser Asn Leu
600             605             610             615

gtg aaa cac cag ctt gca cat tct ggc aag cag cct ttt gta tgc aag        2284
Val Lys His Gln Leu Ala His Ser Gly Lys Gln Pro Phe Val Cys Lys
616             621             626             631

gag tgt ggg cga ggc ttc aac tgg aag gga aat ctc ctc aca cac cag        2332
Glu Cys Gly Arg Gly Phe Asn Trp Lys Gly Asn Leu Leu Thr His Gln
632             637             642             647

agg aca cac tca ggg gag aag ccc ttc gtg tgt aat gtg tgt ggg caa        2380
Arg Thr His Ser Gly Glu Lys Pro Phe Val Cys Asn Val Cys Gly Gln
648             653             658             663

ggc ttc agc tgg aag aga agt ctc acc aga cac cac tgg cgg ata cac        ·2428
```

1839

```
Gly Phe Ser Trp Lys Arg Ser Leu Thr Arg His His Trp Arg Ile His
664             669             674         679

tca aag gag aag cct ttt gtt tgc cag gag tgt aag cga ggc tat acc    2476
Ser Lys Glu Lys Pro Phe Val Cys Gln Glu Cys Lys Arg Gly Tyr Thr
680             685             690             695

agt aag tca gac ctc act gtg cat gaa aga ata cac aca gga gag agg    2524
Ser Lys Ser Asp Leu Thr Val His Glu Arg Ile His Thr Gly Glu Arg
696             701             706             711

cct tat gaa tgc caa gag tgt gga cga aag ttt agc aat aag tca tac    2572
Pro Tyr Glu Cys Gln Glu Cys Gly Arg Lys Phe Ser Asn Lys Ser Tyr
712             717             722             727

tac agt aag cac tta aag aga cac tta cgt gag aag cgt ttt tgt aca    2620
Tyr Ser Lys His Leu Lys Arg His Leu Arg Glu Lys Arg Phe Cys Thr
728             733             738             743

ggg agt gtg ggt gag gct tca tct tga agtta tatctcacca tccatcagag    2672
Gly Ser Val Gly Glu Ala Ser Ser  *
744             749

gacacactca ggagagtaac tttgctttgt tacaagcttt agttgaggct gcataacttg    2732

ttcgtgaaga tataacagag gcagacagaa tccagagggc tacagagaac ctgaattcaa    2792

cccatgtgtc cccaagagat tcagagaaaa gaggtcaatg tttagggaac agagatgcca    2852

gttgagggga gggcattacc tgggctattg gggaaatgtg gtctctttcc tactgagcac    2912

atattcttgt tgtatttgtg ccaggctgtg ctttctaagg actgctctta gccagtgact    2972

gcagagcagg gataccaagg caggcctgtt acactctccc caacctcctt ggactgcaaa    3032

caatctagga cacctccacc aaacctcctc ttgcactttc cctctggctt ccctcccagc    3092

cttccttggt ttggatgttt tgtcccctcc ttaatttatg ttgaaactct acataaactg    3152

tttactgttg aaacagtgta agtattagga ggtgggacct ttgggaagtg attaagtcaa    3212

gtcacgaaga tagagctttg cgaatgggat caggtgccct tatgaaaagg cttgatagag    3272

ggagtttgtc ctgtggccct tctattttct gctctgtgag gacacaatgc tcctcccttc    3332

caaaagatgc agcatgaagg catcatcttg gaaacagaca tgagccctca acagacaact    3392

gcacctactg atgttttgat gttgaacttc ccagcctcca gaactctggg aaaataaagt    3452

cctctttata catttcctag tcagtggtat tttattataa cagctcaaat agactaagta    3512

actgctcccc tcatcattct ctcacagtca tatctggaaa taaatctct gtatatgcaa    3572

aaaaaaaaaa                                                          3582
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1840

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cgccgcttct tccgctttct cgtcaggctc ctgcaacccc aggcatgaac caaggtttct     180

gaactactgg gcgggagcca acgtctcttc tttctcccgc tctggcggag gctttgtcgc     240

tgcgggctgg gccccagggt gtccccc     atg gcg ggg ccg cgg gtg gag gtc     291
                                Met Ala Gly Pro Arg Val Glu Val
                                 1               5

gat ggc agc atc atg gaa ggg ggc ggc cag atc ctg aga gtc tct acg     339
Asp Gly Ser Ile Met Glu Gly Gly Gly Gln Ile Leu Arg Val Ser Thr
  9             14                  19                      24

gcc ttg agc tgt ctc cta ggc ctc ccc ttg cgg gtg cag aag atc cga     387
Ala Leu Ser Cys Leu Leu Gly Leu Pro Leu Arg Val Gln Lys Ile Arg
 25              30                  35                      40

gcc ggc cgg agc acg cca ggc ctg agt att atg acc tga aggcctcaac     436
Ala Gly Arg Ser Thr Pro Gly Leu Ser Ile Met Thr  *
 41              46                  51

atttatctgg actggaaatg attcgagatt tgtgtgatgg gcaactggag ggggcagaaa     496

ttggctcaac agaaataacc tttacaccag agaagatcaa aggtggaatc ca             548
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<213> Homo sapiens

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<400> 554

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tcccgggggtt cttcgcgccg ggccccttcc gcgtgggtga gtgaatgtga gagtcagcgc     120

tcgcgccgcg cgcgccgccc gcctccgctg ttcggcgctc tgctttaggc ggtggggggc     180
```

1841

```
gggcgcgcgc gtaaaagcat agagacgggc attgagctct tgggctagag cgtcgccgag        240

tcggagccgg agcctgagcc gcgcgctgtg tctccgctgc gtccgccgag gcccccgagt        300

gtcagggaca aaagcctccg cctgctcccg cagccggggc tcatctgccg ccgccgccgc        360

gctgaggaga gttcgccgcc gtcgccgccc gtgaggatct gagagcc  atg tcg gcc        416
                                                      Met Ser Ala
                                                        1
```

```
agc agc ctc ttg gag cag aga cca aaa ggt caa gga aac aaa gta caa        464
Ser Ser Leu Leu Glu Gln Arg Pro Lys Gly Gln Gly Asn Lys Val Gln
 4               9               14              19
```

```
aat gga tct gta cat caa aag gat gga tta aac gat gat gat ttt gaa        512
Asn Gly Ser Val His Gln Lys Asp Gly Leu Asn Asp Asp Asp Phe Glu
 20              25              30              35
```

```
cct tac ttg agt cca cag gca agg ccc aat aat gca tat act gcc atg        560
Pro Tyr Leu Ser Pro Gln Ala Arg Pro Asn Asn Ala Tyr Thr Ala Met
 36              41              46              51
```

```
tca gat tcc tac tta ccc agt tac tac agt ccc tcc att ggc ttc tcc        608
Ser Asp Ser Tyr Leu Pro Ser Tyr Tyr Ser Pro Ser Ile Gly Phe Ser
 52              57              62              67
```

```
tat tct ttg ggt gaa gct gct tgg tct acg ggg ggt gac aca gcc atg        656
Tyr Ser Leu Gly Glu Ala Ala Trp Ser Thr Gly Gly Asp Thr Ala Met
 68              73              78              83
```

```
ccc tac tta act tct tat gga cag ctg agc aac gga gag ccc cac ttc        704
Pro Tyr Leu Thr Ser Tyr Gly Gln Leu Ser Asn Gly Glu Pro His Phe
 84              89              94              99
```

```
cta cca gat gca atg ttt ggg caa cca gga gcc cta ggt agc act cca        752
Leu Pro Asp Ala Met Phe Gly Gln Pro Gly Ala Leu Gly Ser Thr Pro
100             105             110             115
```

```
ttt ctt ggt cag cat ggt ttt aat ttc ttt ccc agt ggg att gac ttc        800
Phe Leu Gly Gln His Gly Phe Asn Phe Phe Pro Ser Gly Ile Asp Phe
116             121             126             131
```

```
tca gca tgg gga aat aac agt tct cag gga cag tct act cag agc tct        848
Ser Ala Trp Gly Asn Asn Ser Ser Gln Gly Gln Ser Thr Gln Ser Ser
132             137             142             147
```

```
gga tat agt agc aat tat gct tat gca cct agc tcc tta ggt gga gcc        896
Gly Tyr Ser Ser Asn Tyr Ala Tyr Ala Pro Ser Ser Leu Gly Gly Ala
148             153             158             163
```

```
atg att gat gga cag tca gct ttt gcc aat gag acc ctc aat aag gct        944
Met Ile Asp Gly Gln Ser Ala Phe Ala Asn Glu Thr Leu Asn Lys Ala
164             169             174             179
```

```
cct ggc atg aat act ata gac caa ggg atg gca gca ctg aag ttg ggt        992
Pro Gly Met Asn Thr Ile Asp Gln Gly Met Ala Ala Leu Lys Leu Gly
```

```
            180                 185                 190                 195

agc aca gaa gtt gca agc aat gtt cca aaa gtt gta ggt tct gct gtt     1040
Ser Thr Glu Val Ala Ser Asn Val Pro Lys Val Val Gly Ser Ala Val
196                 201                 206                 211

ggt agc ggg tcc att act agt aac atc gtg gct tcc aat agt ttg cct     1088
Gly Ser Gly Ser Ile Thr Ser Asn Ile Val Ala Ser Asn Ser Leu Pro
212                 217                 222                 227

cca gcc acc att gct cct cca aaa cca gca tct tgg gct gat att gct     1136
Pro Ala Thr Ile Ala Pro Pro Lys Pro Ala Ser Trp Ala Asp Ile Ala
228                 233                 238                 243

agc aag cct gca aaa cag caa cct aaa ctg aag acc aag aat ggc att     1184
Ser Lys Pro Ala Lys Gln Gln Pro Lys Leu Lys Thr Lys Asn Gly Ile
244                 249                 254                 259

gca ggg tca agt ctt ccg cca ccc ccg ata aag cat aac atg gat att     1232
Ala Gly Ser Ser Leu Pro Pro Pro Ile Lys His Asn Met Asp Ile
260                 265                 270                 275

gga act tgg gat aac aag ggt ccc gtt gca aaa gcc ccc tca cag gct     1280
Gly Thr Trp Asp Asn Lys Gly Pro Val Ala Lys Ala Pro Ser Gln Ala
276                 281                 286                 291

ttg gtt cag aat ata ggt cag cca acc cag ggg tct cct cag cct gta     1328
Leu Val Gln Asn Ile Gly Gln Pro Thr Gln Gly Ser Pro Gln Pro Val
292                 297                 302                 307

ggt cag cag gct aac aat agc cca cca gtg gct cag gca tca gta ggg     1376
Gly Gln Gln Ala Asn Asn Ser Pro Pro Val Ala Gln Ala Ser Val Gly
308                 313                 318                 323

caa cag aca cag cca ttg cct cca cct cca cca cag cct gcc cag ctt     1424
Gln Gln Thr Gln Pro Leu Pro Pro Pro Pro Gln Pro Ala Gln Leu
324                 329                 334                 339

tca gtc cag caa cag gca gct cag cca acc cgc tgg gta gca cct cgg     1472
Ser Val Gln Gln Gln Ala Ala Gln Pro Thr Arg Trp Val Ala Pro Arg
340                 345                 350                 355

aac cgt ggc agt ggg ttc ggt cat aat ggg gtg gat ggt aat gga gta     1520
Asn Arg Gly Ser Gly Phe Gly His Asn Gly Val Asp Gly Asn Gly Val
356                 361                 366                 371

gga cag tct cag gct ggt tct gga tct act cct tca gaa ccc cac cca     1568
Gly Gln Ser Gln Ala Gly Ser Gly Ser Thr Pro Ser Glu Pro His Pro
372                 377                 382                 387

gtg ttg gag aag ctt cgg tcc att aat aac tat aac ccc aaa gat ttt     1616
Val Leu Glu Lys Leu Arg Ser Ile Asn Asn Tyr Asn Pro Lys Asp Phe
388                 393                 398                 403

gac tgg aat ctg aaa cat ggc cgg gtt ttc atc att aag agc tac tct     1664
Asp Trp Asn Leu Lys His Gly Arg Val Phe Ile Ile Lys Ser Tyr Ser
404                 409                 414                 419
```

1843

```
gag gac gat att cac cgt tcc att aag tat aat att tgg tgc agc aca          1712
Glu Asp Asp Ile His Arg Ser Ile Lys Tyr Asn Ile Trp Cys Ser Thr
420              425                430                435

gag cat ggt aac aag aga ctg gat gct gct tat cgt tcc atg aac ggg          1760
Glu His Gly Asn Lys Arg Leu Asp Ala Ala Tyr Arg Ser Met Asn Gly
436              441                446                451

aaa ggc ccc gtt tac tta ctt ttc agt gtc aac ggc agt gga cac ttc          1808
Lys Gly Pro Val Tyr Leu Leu Phe Ser Val Asn Gly Ser Gly His Phe
452              457                462                467

tgt ggc gtg gca gaa atg aaa tct gct gtg gac tac aac aca tgt gca          1856
Cys Gly Val Ala Glu Met Lys Ser Ala Val Asp Tyr Asn Thr Cys Ala
468              473                478                483

ggt gtg tgg tcc cag gac aaa tgg aag ggt cgt ttt gat gtc agg tgg          1904
Gly Val Trp Ser Gln Asp Lys Trp Lys Gly Arg Phe Asp Val Arg Trp
484              489                494                499

att ttt gtg aag gac gtt ccc aat agc caa ctg cga cac att cgc cta          1952
Ile Phe Val Lys Asp Val Pro Asn Ser Gln Leu Arg His Ile Arg Leu
500              505                510                515

gag aac aac gag aat aaa cca gtg acc aac tct agg gac act cag gaa          2000
Glu Asn Asn Glu Asn Lys Pro Val Thr Asn Ser Arg Asp Thr Gln Glu
516              521                526                531

gtg cct ctg gaa aag gct aag cag gtg ttg aaa att ata gcc agc tac          2048
Val Pro Leu Glu Lys Ala Lys Gln Val Leu Lys Ile Ile Ala Ser Tyr
532              537                542                547

aag cac acc act tcc att ttt gat gac ttc tca cac tat gag aaa cgc          2096
Lys His Thr Thr Ser Ile Phe Asp Asp Phe Ser His Tyr Glu Lys Arg
548              553                558                563

cca aga gga aga aga aag tgt taa aaaggaacgt caaggtcgtg ggaaataaaa        2150
Pro Arg Gly Arg Arg Lys Cys  *
564              569

ggcagttcta cacagactgc agcaacggtt gcatctgcat atcctaagag gaaaaaatga        2210

ccttcaagag aattaggact tttttcttaa tttcactgac ttcagagacg attgcagact        2270

tgcagtttaa gtattggaat ttcacaaaag acataggact taactggaaa atgaaaaaaa        2330

aaagaaaaag aaaaaactaa ccaaaaaatc cctctaggta gtttagggga aaaatgtccc        2390

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ttcctcctcc cattttgaca tttgcacttg gagaacactt gagttgtgaa ggttttgggc        2570

atccacccca gaaagtggga atttgatttt atccttccga actggaagaa cattttatg        2630
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aagaattttt gtctaggaga atataacagt gttacccaag gttgtgtctt taagggtggt      2690

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gttcttgtac attatactga ttaagtcagg attaatttga tttcaaagct gagaacagtg      2810

gtaaaaactc gtttacagaa atgcatttct gtaaacgagt ttttaccact gttctcagct      2870

ttgaaatcaa attaatcctg acttaatcag tataatgtac aagaacagaa catttcttag      2930

gactcctagt actttacttt gagtaacaaa aggtcagaga aaatgaacca cccttaaaga      2990

cacaaccttg ggtaacactg ttatattctc ctagacaaaa attcttcata aaaatgttct      3050

tccagttcgg aaggataaaa tcaaattccc actttctggg gtggatgccc aaaaccttca      3110

caactcaagt gttctccaag tgcaaatgtc aaaatgggag gaggaaaggg tttaaaaatt      3170

agagaaaact gtatgcactt acggacttaa aaatccgaaa aacatagtaa aaagacaaaa      3230

aaacatagca ttatgctctg aaatcacaac caaagccaaa ataaaaggga cattttttcac     3290

ctaaactacc tagagggatt ttttgtttag ttttttcttt ttcttttttt tttcattttc      3350

cagttaagtc ctatgtcttt tgtgaaattc caatacttaa actgcaagtc tgcaatcgtc      3410

tctgaagtca gtgaaattaa gaaaaaagtc ctaattctct tgaaggtcat tttttcctct      3470

taggatatgc agatgcaacc gttgctgcag tctgtgtaga actgcctttt atttcccacg      3530

accttgacgt tcctacagag gtaagaaaaa aattgaaatg gttaaaaatt atctgaacat      3590

gctttatgaa tttaaaaact tcacagaata actcaacaga aatttaatta tttagaatta      3650

ttagaaaatt aattattta agtagaacat tccccacaaa gaaaaactgg ctttttacttt      3710

gtttttaaaca cttaaacacc ttaatgcaaa attactttg acttgaaaat tcattacatg      3770

ctttcctatt atactgttta gattaatact tagttgtcag gccccccaaa aatatgggcc      3830

taatggaagt aaccc                                                       3845


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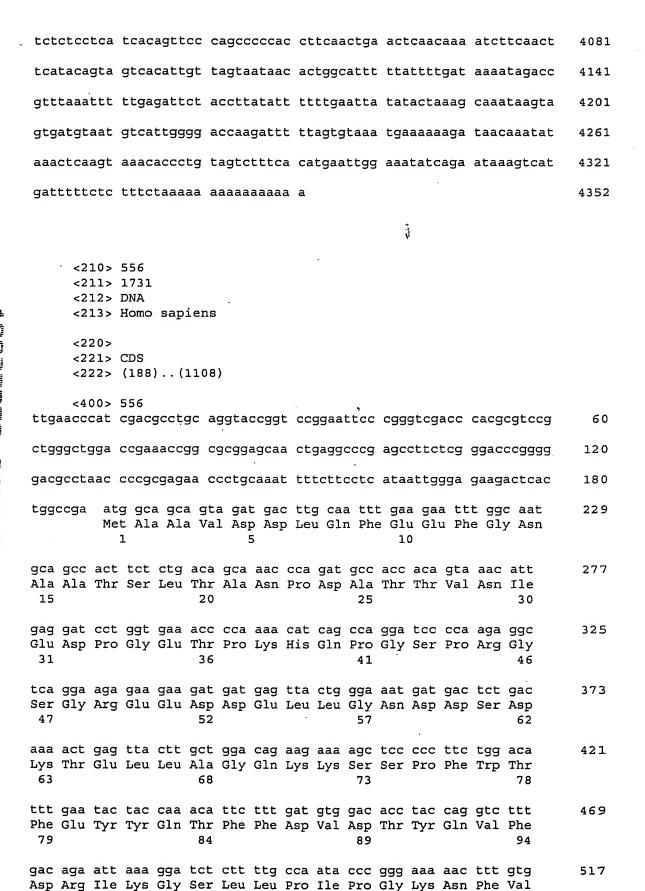
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                        1               5


tgc tgg gcg gtc gaa gag atg ggg gtg ccc gtg gcg gcc cgg gcc ccg      157
Cys Trp Ala Val Glu Glu Met Gly Val Pro Val Ala Ala Arg Ala Pro
 12              17                  22                  27


gaa tcg acg ctg cgc agg ctg tgt ctg ggc cag ggg gct gac atc tgg      205
Glu Ser Thr Leu Arg Arg Leu Cys Leu Gly Gln Gly Ala Asp Ile Trp
 28              33                  38                  43


gcc tac atc ttg cag cat gtg cac agt cag agg act gtc aag aag atc      253
Ala Tyr Ile Leu Gln His Val His Ser Gln Arg Thr Val Lys Lys Ile
 44              49                  54                  59


cgg gga aac cta ctc tgg tat ggc cac cag gac agt cca cag gtc cgt      301
Arg Gly Asn Leu Leu Trp Tyr Gly His Gln Asp Ser Pro Gln Val Arg
 60              65                  70                  75


cgg aag tta gag ctg gaa gct gct gtg acc cgc ctg cgg gca gaa atc      349
Arg Lys Leu Glu Leu Glu Ala Ala Val Thr Arg Leu Arg Ala Glu Ile
 76              81                  86                  91


cag gaa ctc gac cag agc ctg gag ctg atg gag cga gac act gag gct      397
Gln Glu Leu Asp Gln Ser Leu Glu Leu Met Glu Arg Asp Thr Glu Ala
 92              97                  102                 107


cag gac acg gcc atg gag cag gca cgt cag cac act caa gac acc cag      445
Gln Asp Thr Ala Met Glu Gln Ala Arg Gln His Thr Gln Asp Thr Gln
108             113                 118                 123


cgt cga gct ctc ctc ctc cgg gcc caa gct ggg gcc atg cga aga cag      493
Arg Arg Ala Leu Leu Leu Arg Ala Gln Ala Gly Ala Met Arg Arg Gln
124             129                 134                 139


cag cat acg ctc cga gat ccc atg cag cgg ctg cag aat caa ctg agg      541
Gln His Thr Leu Arg Asp Pro Met Gln Arg Leu Gln Asn Gln Leu Arg
140             145                 150                 155


cgc ctg cag gac atg gag agg aaa gcc aaa gta gat gtg acc ttt gga      589
Arg Leu Gln Asp Met Glu Arg Lys Ala Lys Val Asp Val Thr Phe Gly
156             161                 166                 171


tcc ctc acg tcg gca gct ctg ggc ctg gag ccc gtg gtc ctg cgt gat      637
Ser Leu Thr Ser Ala Ala Leu Gly Leu Glu Pro Val Val Leu Arg Asp
172             177                 182                 187


gtc cga aca gcc tgc acc ctc cgg gcc cag ttc ctg cag aac ctc ctg      685
Val Arg Thr Ala Cys Thr Leu Arg Ala Gln Phe Leu Gln Asn Leu Leu
188             193                 198                 203


ctt ccc cag gcc aag agg ggc agc ctc cca acc cct cat gat gac cac      733
Leu Pro Gln Ala Lys Arg Gly Ser Leu Pro Thr Pro His Asp Asp His
204             209                 214                 219


ttt ggc act tcg tac cag cag tgg ctg agc tca gtg gag acg ctg ctg      781
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1846

```
Phe Gly Thr Ser Tyr Gln Gln Trp Leu Ser Ser Val Glu Thr Leu Leu
220           225               230           235

aca aac cac ccc cca ggc cac gtc ctg gct gcc ttg gag cac ctg gct        829
Thr Asn His Pro Pro Gly His Val Leu Ala Ala Leu Glu His Leu Ala
236           241               246           251

gca gag cgg gag gca gag gtt cgg tcc ctg tgc agt ggg gat ggg ctt        877
Ala Glu Arg Glu Ala Glu Val Arg Ser Leu Cys Ser Gly Asp Gly Leu
252           257               262           267

ggc gac aca gag ata tcc aga ccc cag gcc ccg gac cag tca gac tcc        925
Gly Asp Thr Glu Ile Ser Arg Pro Gln Ala Pro Asp Gln Ser Asp Ser
268           273               278           283

agc cag acc ctg ccg tcc atg gtt cat ctc atc cag gag ggc tgg cgg        973
Ser Gln Thr Leu Pro Ser Met Val His Leu Ile Gln Glu Gly Trp Arg
284           289               294           299

act gtg ggt gtg ctg gtc tcc cag cgg agc acc ctc ctg aag gag cgg       1021
Thr Val Gly Val Leu Val Ser Gln Arg Ser Thr Leu Leu Lys Glu Arg
300           305               310           315

caa gtc ttg acc cag cgc ctc cag ggc ctg gtg gag gag gtg gag aga       1069
Gln Val Leu Thr Gln Arg Leu Gln Gly Leu Val Glu Glu Val Glu Arg
316           321               326           331

cgc gtc ctg gga tcc agt gag agg cag gtg ctg ata ctg ggg ctt cgg       1117
Arg Val Leu Gly Ser Ser Glu Arg Gln Val Leu Ile Leu Gly Leu Arg
332           337               342           347

cgc tgt tgc ctg tgg acg gag ctc aag gcc ctg cac gat cag agc cag       1165
Arg Cys Cys Leu Trp Thr Glu Leu Lys Ala Leu His Asp Gln Ser Gln
348           353               358           363

gag ctg cag gat gca gct ggg cat cgg cag ctc ctg ctg agg gag cta       1213
Glu Leu Gln Asp Ala Ala Gly His Arg Gln Leu Leu Leu Arg Glu Leu
364           369               374           379

cag gcc aaa cag cag cgg atc ctg cac tgg cgc cag ctg gtg gag gag       1261
Gln Ala Lys Gln Gln Arg Ile Leu His Trp Arg Gln Leu Val Glu Glu
380           385               390           395

acc cag gaa cag gtc cgc ctg ctc atc aag gga aac tcg gcc agc aag       1309
Thr Gln Glu Gln Val Arg Leu Leu Ile Lys Gly Asn Ser Ala Ser Lys
396           401               406           411

acc cgc ctg tgc cgg agc ccg ggg gag gtg cta gct ctg gtc cag cga       1357
Thr Arg Leu Cys Arg Ser Pro Gly Glu Val Leu Ala Leu Val Gln Arg
412           417               422           427

aag gtg gtc cct aca ttt gag gca gtg gca cca cag agc cgg gag ctg       1405
Lys Val Val Pro Thr Phe Glu Ala Val Ala Pro Gln Ser Arg Glu Leu
428           433               438           443

ctg cgc tgt ctg gag gag gaa gtc cgg cat ttg ccc cac att ctg ttg       1453
Leu Arg Cys Leu Glu Glu Glu Val Arg His Leu Pro His Ile Leu Leu
```

1847

```
ggc acg ctg ctg cgg cac agg ccg gga gag ttg aag ccc ctg ccc acg    1501
Gly Thr Leu Leu Arg His Arg Pro Gly Glu Leu Lys Pro Leu Pro Thr
460             465             470             475

gtc ctc cca tcc atc cac cag ctg cac ccc gcg tcc cca agg ggc tcc    1549
Val Leu Pro Ser Ile His Gln Leu His Pro Ala Ser Pro Arg Gly Ser
476             481             486             491

agc ttc ata gcg ctg agc cac aag ctg ggg ctg cct cca ggg aag gcc    1597
Ser Phe Ile Ala Leu Ser His Lys Leu Gly Leu Pro Pro Gly Lys Ala
492             497             502             507

tcg gag ctg ctc ctg ccg gcg gct gcc tct ctt cgc cag gac ctt ctg    1645
Ser Glu Leu Leu Leu Pro Ala Ala Ala Ser Leu Arg Gln Asp Leu Leu
508             513             518             523

ctc ctg cag gac cag cgg agc ctc tgg tgc tgg gat cta ctc cac atg    1693
Leu Leu Gln Asp Gln Arg Ser Leu Trp Cys Trp Asp Leu Leu His Met
524             529             534             539

aag acc agc ctg ccg cca ggc ctt ccc acc cag gag ctg ctg cag atc    1741
Lys Thr Ser Leu Pro Pro Gly Leu Pro Thr Gln Glu Leu Leu Gln Ile
540             545             550             555

cag gca tcc cag gaa aaa cag cag aaa gag aac ctg ggg cag gct ctg    1789
Gln Ala Ser Gln Glu Lys Gln Gln Lys Glu Asn Leu Gly Gln Ala Leu
556             561             566             571

aag agg ctg gag aag cta ctg aaa cag gca ctg gag cga atc cct gag    1837
Lys Arg Leu Glu Lys Leu Leu Lys Gln Ala Leu Glu Arg Ile Pro Glu
572             577             582             587

ctg cag ggg atc gtg ggg gac tgg tgg gag cag cca ggc cag gcc gcc    1885
Leu Gln Gly Ile Val Gly Asp Trp Trp Glu Gln Pro Gly Gln Ala Ala
588             593             598             603

ctc tct gag gag ctc tgc cag ggc ctg tcc ctg ccc cag tgg cgg ctg    1933
Leu Ser Glu Glu Leu Cys Gln Gly Leu Ser Leu Pro Gln Trp Arg Leu
604             609             614             619

cgc tgg gtt cag gcc cag ggg gcc ctg cag aag ctg tgc agc tga aga    1981
Arg Trp Val Gln Ala Gln Gly Ala Leu Gln Lys Leu Cys Ser  *
620             625             630

gagggttcaa acggaagccg agaacttgac actgttcacc ccaacacctc acctccccca    2041

ggacatttgg aagaaagcag cgccaggatt cctcggcagt cgtccccacc cgcacctgca    2101

gtcccctcat gtgctgttct gctgccccac tcagctcctg accctgtcc tttcatcccg     2161

ctaaagcacc ccctaaaacc ccttcatcac tttcattctc agcaaaaagt aattgagcac    2221

ctcctctagg cgctggggag tccacactga acaaagaaa cagaaaccc tgtcttccag       2281

cagttgagtt ctaggcagg gagacagagt ttacaagata aggaaaatat atatgtagta      2341
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```
tgctgcaagt taactgctgt gtgggaaatc cagcaggggg tgggatgtgt gatttgaatt    2401

gagggccaca ctgcccaggt cgtgctccgt caaggggtga gcaggagcaa caggggtggc    2461

tgagtaaggg cttgcagctg gaggcaacag cacatgcaaa ggccctgagc caggatgtgc    2521

tgcaataagg gccactgagg gggacagtgt aggttggggg tgaggaatgt attaaaagat    2581

gagattgcct tctagtttgt atagtttctt tttttacatg taaatcagcc atttggaatt    2641

tatcctagca catggatcca attttgtctt attttacata tatcctagta gcacttactg    2701

aaattcccag tcagagtggc agttgcctct gagggaaggt gggtggcagg gatcaactga    2761

ggaggagaca cagaaatgtc ctagcctgat gggaaatgtg tggtgtcaag accagcggcg    2821

gtgacgcagg tgtagagatt tgtcagagct catgtagttg tagtcttaag gcctgtgcat    2881

ttcactgcgt gggttactca atttataaag caaagccctt acacttttga gatgccacct    2941

ttttatgcac taaatttcca tgtttaattg ggttatatct ggcttctctc cagacctgct    3001

ttgtatttaa ctctccatgt gtcattccta cagtagctta atagaaaggc ttgtgacaca    3061

ttgtcatatc tgttcttgtt ttcttttgtt tttttttttt ttttttttga gatgcagtct    3121

cattctgttg cccaagttgg agtgcagtgg catgatctca gctcactgca acctccgcct    3181

cccaggttca agccattctc atgcctcagc ttccccagta gctaggatta caggtacgca    3241

ccaccacgcc cagctcattt ttgtactttt agtagggacg gggtttcatc atgttggcca    3301

gactggtctc gaactcctga cctcaagtga tctgcctgcc tcggcctccc aaagtgctgg    3361

gattacaggc atgagccacc gcgcctgacc acattgccat atctgaaatg ctggattct    3421

cttaggtgct tttctttttc tttctttctt tctttttttg agacagaatc tggctgtttc    3481

ccaggctgaa gtgcagtggc atgaactcag ctcactgcaa cctctgcctc ctggattcaa    3541

acaattctca tgtctcagcc tcctgaatag ctgggattac aggcacccac caccatatct    3601

ggctaatatt tgtatttttt gtagagtcgg agctttacca tgttggtcag ctgctctcc    3661

aactcctggc ctcaagtgat tctatcgcct ctgcctccca aatcttcacc tgctgggatt    3721

agtttcccct gtctcagtaa attttttttc ccaaactaag tgaacattag atttaatttg    3781

gctggcccca gaagaaaaac atgcacagat ggtagtttta ctggtgttgc agtaagtttt    3841

caaatttgga agtttggcag ctttatgatc ttgaaccttg ctgtccatct ctcacacaac    3901

tcctctcttg gcctccagag tccctttact ctcccagctt tcctcctgcc cctggctgct    3961

gtttcccagc ctttccacat tggctttccc atgtagtcct tagtgtgtct gctcctcctc    4021
```

1849

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  tctctcctca tcacagttcc cagcccccac cttcaactga actcaacaaa atcttcaact    4081

  tcatacagta gtcacattgt tagtaataac actggcattt ttattttgat aaaatagacc    4141

  gtttaaattt ttgagattct accttatatt ttttgaatta tatactaaag caaataagta    4201

  gtgatgtaat gtcattgggg accaagattt ttagtgtaaa tgaaaaaaga taacaaatat    4261

  aaactcaagt aaacaccctg tagtctttca catgaattgg aaatatcaga ataaagtcat    4321

  gatttttctc tttctaaaaa aaaaaaaaaa a                                   4352
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<210> 556
<211> 1731
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (188)..(1108)

<400> 556

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ttgaacccat cgacgcctgc aggtaccggt ccggaattcc cgggtcgacc cacgcgtccg      60

ctgggctgga ccgaaaccgg cgcggagcaa ctgaggcccg agccttctcg ggacccgggg     120

gacgcctaac cccgcgagaa ccctgcaaat tttcttcctc ataattggga gaagactcac     180

tggccga atg gca gca gta gat gac ttg caa ttt gaa gaa ttt ggc aat      229
        Met Ala Ala Val Asp Asp Leu Gln Phe Glu Glu Phe Gly Asn
         1               5                   10

gca gcc act tct ctg aca gca aac cca gat gcc acc aca gta aac att     277
Ala Ala Thr Ser Leu Thr Ala Asn Pro Asp Ala Thr Thr Val Asn Ile
 15                  20                  25                  30

gag gat cct ggt gaa acc cca aaa cat cag cca gga tcc cca aga ggc     325
Glu Asp Pro Gly Glu Thr Pro Lys His Gln Pro Gly Ser Pro Arg Gly
 31                  36                  41                  46

tca gga aga gaa gaa gat gat gag tta ctg gga aat gat gac tct gac     373
Ser Gly Arg Glu Glu Asp Asp Glu Leu Leu Gly Asn Asp Asp Ser Asp
 47                  52                  57                  62

aaa act gag tta ctt gct gga cag aag aaa agc tcc ccc ttc tgg aca     421
Lys Thr Glu Leu Leu Ala Gly Gln Lys Lys Ser Ser Pro Phe Trp Thr
 63                  68                  73                  78

ttt gaa tac tac caa aca ttc ttt gat gtg gac acc tac cag gtc ttt     469
Phe Glu Tyr Tyr Gln Thr Phe Phe Asp Val Asp Thr Tyr Gln Val Phe
 79                  84                  89                  94

gac aga att aaa gga tct ctt ttg cca ata ccc ggg aaa aac ttt gtg     517
Asp Arg Ile Lys Gly Ser Leu Leu Pro Ile Pro Gly Lys Asn Phe Val
```

1850

```
agg tta tat atc cgc agc aat cca gat ctc tat ggc ccc ttt tgg ata    565
Arg Leu Tyr Ile Arg Ser Asn Pro Asp Leu Tyr Gly Pro Phe Trp Ile
111             116                 121                 126

tgt gcc acg ttg gtc ttt gcc ata gca att agt ggg aat ctt tcc aac    613
Cys Ala Thr Leu Val Phe Ala Ile Ala Ile Ser Gly Asn Leu Ser Asn
127             132                 137                 142

ttc ttg atc cat ctg gga gag aag acg tac cat tat gtg ccc gaa ttc    661
Phe Leu Ile His Leu Gly Glu Lys Thr Tyr His Tyr Val Pro Glu Phe
143             148                 153                 158

cga aaa gtg tcc ata gca gct acc atc atc tat gcc tat gcc tgg ctg    709
Arg Lys Val Ser Ile Ala Ala Thr Ile Ile Tyr Ala Tyr Ala Trp Leu
159             164                 169                 174

gtt cct ctt gca ctc tgg ggt ttc ctc atg tgg aga aac agc aaa gtt    757
Val Pro Leu Ala Leu Trp Gly Phe Leu Met Trp Arg Asn Ser Lys Val
175             180                 185                 190

atg aac atc gtc tcc tat tca ttt ctg gag att gtg tgt gtc tat gga    805
Met Asn Ile Val Ser Tyr Ser Phe Leu Glu Ile Val Cys Val Tyr Gly
191             196                 201                 206

tat tcc ctc ttc att tat atc ccc acc gca ata ctg tgg att atc ccc    853
Tyr Ser Leu Phe Ile Tyr Ile Pro Thr Ala Ile Leu Trp Ile Ile Pro
207             212                 217                 222

cag aaa gct gtt cgt tgg att cta gtc atg att gcc ctg ggc atc tca    901
Gln Lys Ala Val Arg Trp Ile Leu Val Met Ile Ala Leu Gly Ile Ser
223             228                 233                 238

gga tct ctc ttg gca atg aca ttt tgg cca gct gtt cgt gag gat aac    949
Gly Ser Leu Leu Ala Met Thr Phe Trp Pro Ala Val Arg Glu Asp Asn
239             244                 249                 254

cga cgc gtt gca ttg gcc aca att gtg aca att gtg ttg ctc cat atg    997
Arg Arg Val Ala Leu Ala Thr Ile Val Thr Ile Val Leu Leu His Met
255             260                 265                 270

ctg ctt tct gtg ggc tgc ttg gca tac ttt ttt gat gca cca gag atg   1045
Leu Leu Ser Val Gly Cys Leu Ala Tyr Phe Phe Asp Ala Pro Glu Met
271             276                 281                 286

gac cat ctc cca aca act aca gct act cca aac caa aca gtt gct gca   1093
Asp His Leu Pro Thr Thr Thr Ala Thr Pro Asn Gln Thr Val Ala Ala
287             292                 297                 302

gcc aag tcc agc taa tgaggaaaga ctcacttgag ataccctctc cttgctgaag   1148
Ala Lys Ser Ser  *
303

ttttcttga cttctccagt tctcttttgt tttttggagc atggttcttt gggaagtggc   1208

atccactgca ggaaagcaga atgagcagag ccagcagaac tgatggagtg gcacaaattc   1268
```

1851

```
ccagtgtctg  gatggtgcca  cactggcgcc  taatcacccg  tttaacaagc  agaaattaaa       1328

tgttgctcag  cacatgtgtc  tttcagctct  tccttttcac  ccatggatga  tcattgcgag       1388

catgcgctga  ttggactgaa  atgccgggga  ataggttagg  catgctcagt  gccgtccctt       1448

tgccaccaca  gtcaaatgac  atgcttcact  gtggtacctt  aatacctgaa  atagaaccat       1508

ggaaaattct  gatgtcctct  ctctgaatta  tgtacagact  acctggggga  tcctcttctc       1568

tccaaatgtt  agccatcctg  aagtagccga  acagtagaaa  ctttggtggg  gattaaccgg       1628

gagcttgaaa  atttgtcttt  ggtaacctga  tactggacag  ctgaactgaa  tggctgcaaa       1688

ataaatacct  cacatgatgt  ctgtgtctgc  aaaaaaaaaa  aaa                          1731
```

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<212> DNA
<213> Homo sapiens

<220>
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<222> (259)..(1377)

<400> 557
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aaggatcctt  attaaattaa  tccccccccc  cccccccccc  cccgagagaa  ctgccgcttg        60

ccgccattga  cacgcacaga  tagaacccaa  agaaaggcaa  agagtcctgc  ccggcaccgg       120

cgccgcgtgg  gccaaacctg  cgcccgtgga  ggggcgcgca  gagggcaccg  ggcgccggga       180

gcaggcggcg  cagcaccagc  attgtgttag  tgccgggagg  ccactgtgtc  agcaagctga       240
```

```
gagggaaact  gaagcaag   atg tcg ggc cgg agt ggg aag aag aaa atg tcc          291
                       Met Ser Gly Arg Ser Gly Lys Lys Lys Met Ser
                        1               5

aag ctg tcc cgt tca gct agg gca ggt gtc atc ttt cca gtg ggg agg            339
Lys Leu Ser Arg Ser Ala Arg Ala Gly Val Ile Phe Pro Val Gly Arg
 12              17              22              27

ctg atg cgt tat ctg aag aaa ggg acg ttc aag tac cgg atc agc gtg            387
Leu Met Arg Tyr Leu Lys Lys Gly Thr Phe Lys Tyr Arg Ile Ser Val
 28              33              38              43

ggc gcc cct gtc tac atg gcg gca gtc att gag tac ctg gca gcg gaa            435
Gly Ala Pro Val Tyr Met Ala Ala Val Ile Glu Tyr Leu Ala Ala Glu
 44              49              54              59

att cta gaa ttg gcc ggc aat gcc gcg agg gac aac aag aag gcc cgg            483
Ile Leu Glu Leu Ala Gly Asn Ala Ala Arg Asp Asn Lys Lys Ala Arg
 60              65              70              75
```

1852

```
ata gcc ccg aga cac atc ttg ctg gca gtt gcc aat gac gag gag ctc        531
Ile Ala Pro Arg His Ile Leu Leu Ala Val Ala Asn Asp Glu Glu Leu
76          81                  86                  91

aac cag ctg cta aaa gga gtg acc atc gcc agt gga ggc gtc ctg ccc        579
Asn Gln Leu Leu Lys Gly Val Thr Ile Ala Ser Gly Gly Val Leu Pro
92              97                  102                 107

aga att cac ccc gaa ctg ctg gcc aaa aag cga ggg acc aaa ggc aag        627
Arg Ile His Pro Glu Leu Leu Ala Lys Lys Arg Gly Thr Lys Gly Lys
108             113                 118                 123

tcg gaa acg atc ctc tcc cca ccc cca gag aaa aga ggc agg aag gcc        675
Ser Glu Thr Ile Leu Ser Pro Pro Pro Glu Lys Arg Gly Arg Lys Ala
124             129                 134                 139

acg tca ggc aag aag ggg ggg aag aaa tcc aag gct gcc aaa cca cgg        723
Thr Ser Gly Lys Lys Gly Gly Lys Lys Ser Lys Ala Ala Lys Pro Arg
140             145                 150                 155

acg tcc aaa aag tcc aaa cca aag gac agc gat aaa gaa gga act tca        771
Thr Ser Lys Lys Ser Lys Pro Lys Asp Ser Asp Lys Glu Gly Thr Ser
156             161                 166                 171

aat tcc acc tct gaa gat ggg cca ggg gat gga ttc acc att ctg tct        819
Asn Ser Thr Ser Glu Asp Gly Pro Gly Asp Gly Phe Thr Ile Leu Ser
172             177                 182                 187

tct aag agc ctt gtt ctg gga cag aag ctg tcc tta acc cag agt gac        867
Ser Lys Ser Leu Val Leu Gly Gln Lys Leu Ser Leu Thr Gln Ser Asp
188             193                 198                 203

atc agc cat att ggc tcc atg aga gtg gag ggc att gtc cac cca acc        915
Ile Ser His Ile Gly Ser Met Arg Val Glu Gly Ile Val His Pro Thr
204             209                 214                 219

aca gcc gaa att gac ctc aaa gaa gat ata ggt aaa gcc ttg gaa aag        963
Thr Ala Glu Ile Asp Leu Lys Glu Asp Ile Gly Lys Ala Leu Glu Lys
220             225                 230                 235

gct ggg gga aaa gag ttc ttg gaa acg gta aag gag ctt cgc aaa tcc       1011
Ala Gly Gly Lys Glu Phe Leu Glu Thr Val Lys Glu Leu Arg Lys Ser
236             241                 246                 251

caa ggc cct ttg gaa gtc gcc gaa gcc gcc gtc agc caa tcc agt gga       1059
Gln Gly Pro Leu Glu Val Ala Glu Ala Ala Val Ser Gln Ser Ser Gly
252             257                 262                 267

ctc gca gcc aaa ttt gtc atc cac tgt cac atc cct cag tgg ggc tcc       1107
Leu Ala Ala Lys Phe Val Ile His Cys His Ile Pro Gln Trp Gly Ser
268             273                 278                 283

gac aaa tgt gaa gaa cag ctt gaa gag acc atc aaa aac tgc ctg tca       1155
Asp Lys Cys Glu Glu Gln Leu Glu Glu Thr Ile Lys Asn Cys Leu Ser
284             289                 294                 299
```

1853

```
gcg gcg gag gac aag aag cta aag tcc gtc gcg ttc ccg cct ttc ccc    1203
Ala Ala Glu Asp Lys Lys Leu Lys Ser Val Ala Phe Pro Pro Phe Pro
300             305             310             315

agc ggc aga aac tgc ttt ccc aaa cag act gcg gcc cag gtg acc ctc    1251
Ser Gly Arg Asn Cys Phe Pro Lys Gln Thr Ala Ala Gln Val Thr Leu
316             321             326             331

aaa gcc atc tca gcc cac ttt gat gac tcg agc gcg tcc tcg ctg aag    1299
Lys Ala Ile Ser Ala His Phe Asp Asp Ser Ser Ala Ser Ser Leu Lys
332             337             342             347

aac gtg tac ttc ctg ctc ttc gac agc gag agc atc ggc atc tac gtg    1347
Asn Val Tyr Phe Leu Leu Phe Asp Ser Glu Ser Ile Gly Ile Tyr Val
348             353             358             363

cag gag atg gcc aag ctc gac gcc aag tag c cgccgcactt ccagcaggg     1398
Gln Glu Met Ala Lys Leu Asp Ala Lys  *
364             369

atcggaggac gacccgagtc ccaagagtgg ggttttgctt tttaaaagga gagaggaggg    1458

gtgatggcag gggagtggag ggtggccggg caggtcctgc cggcgcaggg agccctctgc    1518

ccttcacact ctcctccaaa agagcctcca tctgtaagga agcaggtctc cgcgaggggt    1578

ttctttccat gtgttttcct cctgttgttt tagaactttt ttaaaaaaac agacctcgtt    1638

ttagatttat agcattgact tttacacaca ttcacacaag aaaaaaatcc tttcaaaatt    1698

cttaaaaaaa aaaaaaaa                                                   1716
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<212> DNA
<213> Homo sapiens

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<222> (187)..(846)

<400> 558

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ctagctcaga tgagagagag aatgggactt cttggtactg attgttttc ccatgcctca     120

attggtttct tttagggagc tacaaattta cgggttcact ggtgattgat cttttcatcc    180

agcaca    atg gac aga agt cta agg aac gtc ctt gtg gtt tcc ttt ggg    228
          Met Asp Arg Ser Leu Arg Asn Val Leu Val Val Ser Phe Gly
            1               5               10

ttc ctg ctt ctc ttt aca gcc tat gga ggt ctg cag agc ctg cag agc    276
Phe Leu Leu Leu Phe Thr Ala Tyr Gly Gly Leu Gln Ser Leu Gln Ser
```

```
agc ctg tac agc gag gag ggc ctg ggt gtc aca gcg ctc agc acc ctc     324
Ser Leu Tyr Ser Glu Glu Gly Leu Gly Val Thr Ala Leu Ser Thr Leu
31                  36                      41                  46

tat gga ggc atg ctc ctg tcc tcc atg ttc ctc cca ccg ctc ctc atc     372
Tyr Gly Gly Met Leu Leu Ser Ser Met Phe Leu Pro Pro Leu Leu Ile
47                  52                      57                  62

gag agg ctg ggc tgc aag ggg acc atc atc ctc tcc atg tgt ggc tac     420
Glu Arg Leu Gly Cys Lys Gly Thr Ile Ile Leu Ser Met Cys Gly Tyr
63                  68                      73                  78

gtg gcc ttc tcc gtg ggc aac ttc ttc gcc agc tgg tac act ttg atc     468
Val Ala Phe Ser Val Gly Asn Phe Phe Ala Ser Trp Tyr Thr Leu Ile
79                  84                      89                  94

ccc acc tcc ata ctg ctg gga ctc ggg gcc gcc ccg ctg tgg tct gca     516
Pro Thr Ser Ile Leu Leu Gly Leu Gly Ala Ala Pro Leu Trp Ser Ala
95                  100                     105                 110

cag tgc aca tac ctc acg atc acg gga aac aca cat gca gag aag gcg     564
Gln Cys Thr Tyr Leu Thr Ile Thr Gly Asn Thr His Ala Glu Lys Ala
111                 116                     121                 126

gga aag cgt ggc aaa gac atg gtg aac cag tat ttt ggc atc ttc ttc     612
Gly Lys Arg Gly Lys Asp Met Val Asn Gln Tyr Phe Gly Ile Phe Phe
127                 132                     137                 142

ctc ata ttc cag tca tcc ggt gtg tgg ggc aac ttg atc tca tcg ctg     660
Leu Ile Phe Gln Ser Ser Gly Val Trp Gly Asn Leu Ile Ser Ser Leu
143                 148                     153                 158

gta ttt ggc cag act ccc agc caa gag acc ctt cca gaa gag cag ctc     708
Val Phe Gly Gln Thr Pro Ser Gln Glu Thr Leu Pro Glu Glu Gln Leu
159                 164                     169                 174

acg tcc tgt ggg gcc agt gac tgc ctg atg gcc acc aca acc acc aac     756
Thr Ser Cys Gly Ala Ser Asp Cys Leu Met Ala Thr Thr Thr Thr Asn
175                 180                     185                 190

agc acc cag agg ccc tcc cag cag ctg gtc tac acc ctc ctg ggc atc     804
Ser Thr Gln Arg Pro Ser Gln Gln Leu Val Tyr Thr Leu Leu Gly Ile
191                 196                     201                 206

tac act ggt acg agc tcc atc ggc cca ggg cag ggt ccc tag caaagca     853
Tyr Thr Gly Thr Ser Ser Ile Gly Pro Gly Gln Gly Pro  *
207                 212                     217

gagccaagcc tccttcctgg gctgacaaag actgtctctc ccaatgtaaa aagtaatctc     913

tcttc                                                                   918
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                                                      Met Ala Gly
                                                        1

ttc tgg gtc ggg aca gca ccg ctg gtc gct gcc gga cgg cgt ggg cgg   103
Phe Trp Val Gly Thr Ala Pro Leu Val Ala Ala Gly Arg Arg Gly Arg
  4   9   14   19

tgg ccg ccg cag cag ctg atg ctg agc gcg gcg ctg cgg acc ctg aag   151
Trp Pro Pro Gln Gln Leu Met Leu Ser Ala Ala Leu Arg Thr Leu Lys
 20   25   30   35

cat gtt ctg tac tat tca aga cag tgc tta atg gtg tcc cgt aat ctt   199
His Val Leu Tyr Tyr Ser Arg Gln Cys Leu Met Val Ser Arg Asn Leu
 36   41   ,46   51

ggt tca gtg gga tat gat cct aat gaa aaa act ttt gat aaa att ctt   247
Gly Ser Val Gly Tyr Asp Pro Asn Glu Lys Thr Phe Asp Lys Ile Leu
 52   57   62   67

gtt gct aat aga gga gaa att gca tgt cgg gtt att aga act tgc aag   295
Val Ala Asn Arg Gly Glu Ile Ala Cys Arg Val Ile Arg Thr Cys Lys
 68   73   78   83

aag atg ggc att aag aca gtt gcc atc cac agt gat gtt gat gct agt   343
Lys Met Gly Ile Lys Thr Val Ala Ile His Ser Asp Val Asp Ala Ser
 84   89   94   . 99

tct gtt cat gtg aaa atg gcg gat gag gct gtc tgt gtt ggc cca gct   391
Ser Val His Val Lys Met Ala Asp Glu Ala Val Cys Val Gly Pro Ala
100   105   110   115

ccc acc agt aaa agc tac ctc aac atg gat gcc atc atg gaa gcc att   439
Pro Thr Ser Lys Ser Tyr Leu Asn Met Asp Ala Ile Met Glu Ala Ile
116   121   126   131

aag aaa acc agg gcc caa gct gta cat cca ggt tat gga ttc ctt tca   487
Lys Lys Thr Arg Ala Gln Ala Val His Pro Gly Tyr Gly Phe Leu Ser
132   137   142   147

gaa aac aaa gaa ttt gcc aga tgt ttg gca gca gaa gat gtc gtt ttc   535
Glu Asn Lys Glu Phe Ala Arg Cys Leu Ala Ala Glu Asp Val Val Phe
148   153   158   163

att gga cct gac aca cat gct att caa gcc atg ggc gac aag att gaa   583
Ile Gly Pro Asp Thr His Ala Ile Gln Ala Met Gly Asp Lys Ile Glu
164   169   174   179

1856

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agc aaa tta tta gct aag aaa gca gag gtt aat aca atc cct ggc ttt        631
Ser Lys Leu Leu Ala Lys Lys Ala Glu Val Asn Thr Ile Pro Gly Phe
180                 185                 190                 195

gat gga gta gtc aag gat gca gaa gaa gct gtc aga att gca agg gaa        679
Asp Gly Val Val Lys Asp Ala Glu Glu Ala Val Arg Ile Ala Arg Glu
196                 201                 206                 211

att ggc tac cct gtc atg atc aag gcc tca gca ggt ggt ggt ggg aaa       727
Ile Gly Tyr Pro Val Met Ile Lys Ala Ser Ala Gly Gly Gly Gly Lys
212                 217                 222                 227

ggc atg cgc att gct tgg gat gat gaa gag acc agg gat ggt ttt aga       775
Gly Met Arg Ile Ala Trp Asp Asp Glu Glu Thr Arg Asp Gly Phe Arg
228                 233                 238                 243

ttg tca tct caa gaa gct gct tct agt ttt ggc gat gat aga cta cta       823
Leu Ser Ser Gln Glu Ala Ala Ser Ser Phe Gly Asp Asp Arg Leu Leu
244                 249                 254                 259

ata gaa aaa ttt att gat aat cct cgt cat ata gaa atc cag gtt cta       871
Ile Glu Lys Phe Ile Asp Asn Pro Arg His Ile Glu Ile Gln Val Leu
260                 265                 270                 275

ggt gat aaa cat ggg aat gct tta tgg ctt aat gaa aga gag tgc tca       919
Gly Asp Lys His Gly Asn Ala Leu Trp Leu Asn Glu Arg Glu Cys Ser
276                 281                 286                 291

att cag aga aga aat cag aag gtg gtg gag gaa gca cca agc att ttt       967
Ile Gln Arg Arg Asn Gln Lys Val Val Glu Glu Ala Pro Ser Ile Phe
292                 297                 302                 307

ttg gat gcg gag act cga aga gcg atg gga gaa caa gct gta gct ctt       1015
Leu Asp Ala Glu Thr Arg Arg Ala Met Gly Glu Gln Ala Val Ala Leu
308                 313                 318                 323

gcc aga gca gta aaa tat tcc tct gct ggg acc gtg gag ttc ctt gtg      1063
Ala Arg Ala Val Lys Tyr Ser Ser Ala Gly Thr Val Glu Phe Leu Val
324                 329                 334                 339

gac tct aag aag aat ttt tat ttc ttg gaa atg aat aca aga ctc cag      1111
Asp Ser Lys Lys Asn Phe Tyr Phe Leu Glu Met Asn Thr Arg Leu Gln
340                 345                 350                 355

gtt gag cat cct gtc aca gaa tgc att act ggc ctg gac cta gtc cag      1159
Val Glu His Pro Val Thr Glu Cys Ile Thr Gly Leu Asp Leu Val Gln
356                 361                 366                 371

gaa atg atc cgt gtt gct aag ggc tac cct ctc agg cac aaa caa gct      1207
Glu Met Ile Arg Val Ala Lys Gly Tyr Pro Leu Arg His Lys Gln Ala
372                 377                 382                 387

gat att cgc atc aac ggc tgg gca gtt gaa tgt cgg gtt tat gct gag      1255
Asp Ile Arg Ile Asn Gly Trp Ala Val Glu Cys Arg Val Tyr Ala Glu
388                 393                 398                 403
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gac ccc tac aag tct ttt ggt tta cca tct att ggg aga ttg tct cag      1303
Asp Pro Tyr Lys Ser Phe Gly Leu Pro Ser Ile Gly Arg Leu Ser Gln
404             409             414                 419

tac caa gaa ccg tta cat cta cct ggt gtc cga gtg gac agt ggc atc      1351
Tyr Gln Glu Pro Leu His Leu Pro Gly Val Arg Val Asp Ser Gly Ile
420             425                 430                 435

caa cca gga agt gat att agc att tat tat gat cct atg att tca aaa      1399
Gln Pro Gly Ser Asp Ile Ser Ile Tyr Tyr Asp Pro Met Ile Ser Lys
436             441                 446                 451

cta atc aca tat ggc tct gat aga act gag gca ctg aag aga atg gca      1447
Leu Ile Thr Tyr Gly Ser Asp Arg Thr Glu Ala Leu Lys Arg Met Ala
452             457                 462                 467

gat gca ctg gat aac tat gtt att cga ggt gtt aca cat aat att gca      1495
Asp Ala Leu Asp Asn Tyr Val Ile Arg Gly Val Thr His Asn Ile Ala
468             473                 478                 483

tta ctt cga gag gtg ata atc aac tca cgc ttt gta aaa gga gac atc      1543
Leu Leu Arg Glu Val Ile Ile Asn Ser Arg Phe Val Lys Gly Asp Ile
484             489                 494                 499

agc act aaa ttt ctc tcc gat gtg tat cct gat ggc ttc aaa gga cac      1591
Ser Thr Lys Phe Leu Ser Asp Val Tyr Pro Asp Gly Phe Lys Gly His
500             505                 510                 515

atg cta acc aag agt gag aag aac cag tta ttg gca ata gca tca tca      1639
Met Leu Thr Lys Ser Glu Lys Asn Gln Leu Leu Ala Ile Ala Ser Ser
516             521                 526                 531

ttg ttt gtg gca ttc cag tta aga gca caa cat ttt caa gaa aat tca      1687
Leu Phe Val Ala Phe Gln Leu Arg Ala Gln His Phe Gln Glu Asn Ser
532             537                 542                 547

aga atg cct gtt att aaa cca gac ata gcc aac tgg gag ctc tca gta      1735
Arg Met Pro Val Ile Lys Pro Asp Ile Ala Asn Trp Glu Leu Ser Val
548             553                 558                 563

aaa ttg cat gat aaa gtt cat acc gta gta gca tca aac aat ggg tca      1783
Lys Leu His Asp Lys Val His Thr Val Val Ala Ser Asn Asn Gly Ser
564             569                 574                 579

gtg ttc tcg gtg gaa gtt gat ggg tcg aaa cta aat gtg acc agc acg      1831
Val Phe Ser Val Glu Val Asp Gly Ser Lys Leu Asn Val Thr Ser Thr
580             585                 590                 595

tgg aac ctg gct tcg ccc tta ttg tct gtc agc gtt gat ggc act cag      1879
Trp Asn Leu Ala Ser Pro Leu Leu Ser Val Ser Val Asp Gly Thr Gln
596             601                 606                 611

agg act gtc cag tgt ctt tct cga gaa gca ggt gga aac atg agc att      1927
Arg Thr Val Gln Cys Leu Ser Arg Glu Ala Gly Gly Asn Met Ser Ile
612             617                 622                 627

cag ttt ctt ggt aca gtg tac aag gtg aat atc tta acc aga ctt gcc      1975
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Gln Phe Leu Gly Thr Val Tyr Lys Val Asn Ile Leu Thr Arg Leu Ala
628             633         638             643

gca gaa ttg aac aaa ttt atg ctg gaa aaa gtg act gag gac aca agc      2023
Ala Glu Leu Asn Lys Phe Met Leu Glu Lys Val Thr Glu Asp Thr Ser
644             649         654             659

agt gtt ctg cgt tcc ccg atg ccc gga gtg gtg gtg gcc gtc tct gtc      2071
Ser Val Leu Arg Ser Pro Met Pro Gly Val Val Val Ala Val Ser Val
660             665         670             675

aag cct gga gac gcg gta gca gaa ggt caa gaa att tgt gtg att gaa      2119
Lys Pro Gly Asp Ala Val Ala Glu Gly Gln Glu Ile Cys Val Ile Glu
676             681         686             691

gcc atg aaa atg cag aat agt atg aca gct ggg aaa act ggc acg gtg      2167
Ala Met Lys Met Gln Asn Ser Met Thr Ala Gly Lys Thr Gly Thr Val
692             697         702             707

aaa tct gtg cac tgt caa gct gga gac aca gtt gga gaa ggg gat ctg      2215
Lys Ser Val His Cys Gln Ala Gly Asp Thr Val Gly Glu Gly Asp Leu
708             713         718             723

ctc gtg gag ctg gaa tga aggatt tataaccttt cagtcatcac ccaatttaat      2269
Leu Val Glu Leu Glu  *
724             729

tagccatttg catgatgctt tcacacacaa ttgattcaag cattatacag gaacacccct     2329

gtgcagctac gtttacgtcg tcatttattc cacagagtca agaccaatat tctgccaaaa     2389

aatcaccaat ggaaattttc attgatataa atacttgtac atatgatttg tacttctgct     2449

gtgagattcc ctagtgtcaa aattaaatca ataaaactga gcatttgtct aaaaaaaaaa     2509

aa                                                                    2511



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aaatacaaac ctagcttgag tttagttatg tccctaaatg ttaactgatc cctgtggtca     180

gtagggagac agctggcatc cgtttccaac cagccaagga tattcggtcg actgtactga     240
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ctgaccactt tgctcaggcc gcaagtgtcc ctcagaaaag cctgaggact tattaaggtc     300

atggaaggtt gccttggcag gaactctttt ctaatcac     atg ttt ttg act tcc     353
                                              Met Phe Leu Thr Ser
                                               1

ctc tct agc cct aac cgg cag cca ttt gtt ctc ttt ggt aat cac tcc     401
Leu Ser Ser Pro Asn Arg Gln Pro Phe Val Leu Phe Gly Asn His Ser
 6               11              16              21

aca cga gaa aac ctg aat gct ggc aac ttt aac ttc cct tct gaa gga     449
Thr Arg Glu Asn Leu Asn Ala Gly Asn Phe Asn Phe Pro Ser Glu Gly
 22              27              32              37

cat ctg gta cga agc act ggt ccc ggc ggg agc ttt gcc aag cac atg     497
His Leu Val Arg Ser Thr Gly Pro Gly Gly Ser Phe Ala Lys His Met
 38              43              48              53

gta gcc cag tgt gtc tca cca aag gga cct ctt gct tgt tcg aga aca     545
Val Ala Gln Cys Val Ser Pro Lys Gly Pro Leu Ala Cys Ser Arg Thr
 54              59              64              69

tac ttt ttt gga gct act cat gtt cct tac ttg ggt ggt gac agc aag     593
Tyr Phe Phe Gly Ala Thr His Val Pro Tyr Leu Gly Gly Asp Ser Lys
 70              75              80              85

ctg ccc aag aaa act gaa caa att agg cta ttg tcc cag ata tat gct     641
Leu Pro Lys Lys Thr Glu Gln Ile Arg Leu Leu Ser Gln Ile Tyr Ala
 86              91              96              101

gct gtt att gag gct gtt ttg gct ggc att gca tgt tat gct aaa act     689
Ala Val Ile Glu Ala Val Leu Ala Gly Ile Ala Cys Tyr Ala Lys Thr
 102             107             112             117

tcc agt cta aca aag gcc aag gag gta gca gag caa act ctg gga tct     737
Ser Ser Leu Thr Lys Ala Lys Glu Val Ala Glu Gln Thr Leu Gly Ser
 118             123             128             133

ggg tta gat tcc ttt gag ttg att ccg ttt aag gca gcc ctg cgc tcc     785
Gly Leu Asp Ser Phe Glu Leu Ile Pro Phe Lys Ala Ala Leu Arg Ser
 134             139             144             149

aag atg act ttt cat ata cat gct gtg aat aat cag gga aga att gta     833
Lys Met Thr Phe His Ile His Ala Val Asn Asn Gln Gly Arg Ile Val
 150             155             160             165

ccg ctg gac agt gaa gat agc tta tcc ttt gtg aag acg gct tgt atg     881
Pro Leu Asp Ser Glu Asp Ser Leu Ser Phe Val Lys Thr Ala Cys Met
 166             171             176             181

gcc gtc tat gac att cct gac tta ctg gga ggc aat ggt tgt tta gga     929
Ala Val Tyr Asp Ile Pro Asp Leu Leu Gly Gly Asn Gly Cys Leu Gly
 182             187             192             197

tct gtg gtt ttc tct gaa tca ttt ttg act tct cag atc tta gtt aaa     977
Ser Val Val Phe Ser Glu Ser Phe Leu Thr Ser Gln Ile Leu Val Lys
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1860

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gaa aag gat ggc act gtt acc aca gaa acc agc tcc gta gtc ctg act       1025
Glu Lys Asp Gly Thr Val Thr Thr Glu Thr Ser Ser Val Val Leu Thr
214             219                     224                 229

gct gct gta ccc aga ttc tgc tcc tgg ctg gtg gaa gat aat gaa gta       1073
Ala Ala Val Pro Arg Phe Cys Ser Trp Leu Val Glu Asp Asn Glu Val
230             235                     240                 245

aaa ttg tct gag aaa acc cag caa gca gtg agg ggg gat gag tct ttc       1121
Lys Leu Ser Glu Lys Thr Gln Gln Ala Val Arg Gly Asp Glu Ser Phe
246             251                     256                 261

ctg ggc act tat cta aca gga gga gaa gga gca tat ctt tat tcc agc       1169
Leu Gly Thr Tyr Leu Thr Gly Gly Glu Gly Ala Tyr Leu Tyr Ser Ser
262             267                     272                 277

aat cta cag tcc tgg cct gag gaa ggg aat gtt cat ttc ttc tct agt       1217
Asn Leu Gln Ser Trp Pro Glu Glu Gly Asn Val His Phe Phe Ser Ser
278             283                     288                 293

ggc ctt ctg ttt tct cac tgt cgt cat gga agt atc atc att tcc aag       1265
Gly Leu Leu Phe Ser His Cys Arg His Gly Ser Ile Ile Ile Ser Lys
294             299                     304                 309

gat cac atg aat tcc att tcc ttc tat gat ggg gat tcc acc agt act       1313
Asp His Met Asn Ser Ile Ser Phe Tyr Asp Gly Asp Ser Thr Ser Thr
310             315                     320                 325

gtt gct gct ctt ctc ata gac ttc aaa agc tca ttg ctt cct cac ctc       1361
Val Ala Ala Leu Leu Ile Asp Phe Lys Ser Ser Leu Leu Pro His Leu
326             331                     336                 341

cca gtt cat ttc cat gga tca agc aat ttt ctg atg att gcc ctt ttc       1409
Pro Val His Phe His Gly Ser Ser Asn Phe Leu Met Ile Ala Leu Phe
342             347                     352                 357

ccc aaa tcg aag ata tac caa gca ttt tac tca gag gtc ttc tcc ctc       1457
Pro Lys Ser Lys Ile Tyr Gln Ala Phe Tyr Ser Glu Val Phe Ser Leu
358             363                     368                 373

tgg aaa cag cag gat aac tca ggg atc tct tta aaa gtg atc cag gaa       1505
Trp Lys Gln Gln Asp Asn Ser Gly Ile Ser Leu Lys Val Ile Gln Glu
374             379                     384                 389

gat gga tta tct gtg gaa caa aag aga ttg cac tcc agt gca cag aag       1553
Asp Gly Leu Ser Val Glu Gln Lys Arg Leu His Ser Ser Ala Gln Lys
390             395                     400                 405

ctc ttc agt gcc ctg agc cag cct gct ggg gag aaa cgg agt tcc cta       1601
Leu Phe Ser Ala Leu Ser Gln Pro Ala Gly Glu Lys Arg Ser Ser Leu
406             411                     416                 421

aag tta ctc tca gcc aaa ctc cca gag ctg gac tgg ttt/ctc cag cat      1649
Lys Leu Leu Ser Ala Lys Leu Pro Glu Leu Asp Trp Phe Leu Gln His
422             427                     432                 437
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1861

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ttc gcc atc agc agc att agc cag gag cct gtg atg cgg acc cat ctt          1697
Phe Ala Ile Ser Ser Ile Ser Gln Glu Pro Val Met Arg Thr His Leu
438             443             448             453

cct gtg ctg ctg cag caa gct gaa atc aac act act cac aga ata gaa          1745
Pro Val Leu Leu Gln Gln Ala Glu Ile Asn Thr Thr His Arg Ile Glu
454             459             464             469

agt gac aag gta att atc agc att gta acc ggc ctc cca ggc tgt cac          1793
Ser Asp Lys Val Ile Ile Ser Ile Val Thr Gly Leu Pro Gly Cys His
470             475             480             485

gct agc gag ctc tgt gct ttt ctg gtc act ctg cat aag gaa tgt ggc          1841
Ala Ser Glu Leu Cys Ala Phe Leu Val Thr Leu His Lys Glu Cys Gly
486             491             496             501

aga tgg atg gtg tat cgc caa atc atg gac agc tct gaa tgt ttt cat          1889
Arg Trp Met Val Tyr Arg Gln Ile Met Asp Ser Ser Glu Cys Phe His
502             507             512             517

gct gca cac ttc cag aga tac ctt tcc agt gcc cta gag gcc cag cag          1937
Ala Ala His Phe Gln Arg Tyr Leu Ser Ser Ala Leu Glu Ala Gln Gln
518             523             528             533

aac cgc tct gcg cgc cag tca gcc tac atc cgc aag aag acc aga ctg          1985
Asn Arg Ser Ala Arg Gln Ser Ala Tyr Ile Arg Lys Lys Thr Arg Leu
534             539             544             549

ctg gtg gtg tta caa ggc tac aca gat gtt att gat gtt gtc cag gcc          2033
Leu Val Val Leu Gln Gly Tyr Thr Asp Val Ile Asp Val Val Gln Ala
550             555             560             565

ctg cag acc cac cca gac tca aat gtc aag gcc tcc ttc acc att ggt          2081
Leu Gln Thr His Pro Asp Ser Asn Val Lys Ala Ser Phe Thr Ile Gly
566             571             576             581

gcc atc aca gca tgt gtg gag ccc atg agc tgc tac atg gag cac aga          2129
Ala Ile Thr Ala Cys Val Glu Pro Met Ser Cys Tyr Met Glu His Arg
582             587             592             597

ttt ctc ttt cct aaa tgt ctt gac cag tgt tca caa ggc ctg gtg agt          2177
Phe Leu Phe Pro Lys Cys Leu Asp Gln Cys Ser Gln Gly Leu Val Ser
598             603             608             613

aac gtg gta ttc acc agt cac acc acg gag cag cgg cac cct ctc ctt          2225
Asn Val Val Phe Thr Ser His Thr Thr Glu Gln Arg His Pro Leu Leu
614             619             624             629

gtt cag ctg cag agc ctc atc agg gct gcc aat cct gct gca gcc ttc          2273
Val Gln Leu Gln Ser Leu Ile Arg Ala Ala Asn Pro Ala Ala Ala Phe
630             635             640             645

att ctt gca gaa aat ggg att gtc acc agg aat gaa gac att gag ctg          2321
Ile Leu Ala Glu Asn Gly Ile Val Thr Arg Asn Glu Asp Ile Glu Leu
646             651             656             661
```

att ctc tca gaa aac agt ttt tca agt cct gag atg cta cga tct cga   2369
Ile Leu Ser Glu Asn Ser Phe Ser Ser Pro Glu Met Leu Arg Ser Arg
662   667   672   677

tat tta atg tat cct ggc tgg tat gaa ggt aaa ttg aat gct gga tca   2417
Tyr Leu Met Tyr Pro Gly Trp Tyr Glu Gly Lys Leu Asn Ala Gly Ser
678   683   688   693

gtc tat ccc cta atg gtt cag atc tgc gta tgg ttt ggc cgt ccc ttg   2465
Val Tyr Pro Leu Met Val Gln Ile Cys Val Trp Phe Gly Arg Pro Leu
694   699   704   709

gag aag act cgc ttt gtg gcc aaa tgt aaa gca att cag tcc tcc atc   2513
Glu Lys Thr Arg Phe Val Ala Lys Cys Lys Ala Ile Gln Ser Ser Ile
710   715   720   725

aag cca agt ccc ttc tcc gga aac atc tac cac atc ctg ggc aaa gtg   2561
Lys Pro Ser Pro Phe Ser Gly Asn Ile Tyr His Ile Leu Gly Lys Val
726   731   736   741

aag ttt tca gac tct gag agg acc atg gag gtc tgc tac aac aca ctg   2609
Lys Phe Ser Asp Ser Glu Arg Thr Met Glu Val Cys Tyr Asn Thr Leu
742   747   752   757

gcc aac tcc ttg agc atc atg cca gtt ttg gaa gga ccc aca cca cca   2657
Ala Asn Ser Leu Ser Ile Met Pro Val Leu Glu Gly Pro Thr Pro Pro
758   763   768   773

cca gac tcc aaa agc gta tct caa gac agc agc ggg cag cag gag tgc   2705
Pro Asp Ser Lys Ser Val Ser Gln Asp Ser Ser Gly Gln Gln Glu Cys
774   779   784   789

tac ctt gtg ttc atc ggc tgc tcc ctg aag gaa gac agc atc aag gac   2753
Tyr Leu Val Phe Ile Gly Cys Ser Leu Lys Glu Asp Ser Ile Lys Asp
790   795   800   805

tgg ctg cgg cag tca gct aag cag aag cct cag agg aaa gcc ctg aag   2801
Trp Leu Arg Gln Ser Ala Lys Gln Lys Pro Gln Arg Lys Ala Leu Lys
806   811   816   821

acc agg ggg atg ctg acg caa cag gag atc agg agc atc cac gta aaa   2849
Thr Arg Gly Met Leu Thr Gln Gln Glu Ile Arg Ser Ile His Val Lys
822   827   832   837

cgc cac ttg gaa ccc cta cct gca ggc tac ttt tat aat ggc acc caa   2897
Arg His Leu Glu Pro Leu Pro Ala Gly Tyr Phe Tyr Asn Gly Thr Gln
838   843   848   853

ttt gtt aac ttc ttt ggt gac aaa act gat ttt cac cca ctc atg gac   2945
Phe Val Asn Phe Phe Gly Asp Lys Thr Asp Phe His Pro Leu Met Asp
854   859   864   869

cag ttc atg aat gac tac gtg gaa gaa gcc aac cgg gaa att gag aag   2993
Gln Phe Met Asn Asp Tyr Val Glu Glu Ala Asn Arg Glu Ile Glu Lys
870   875   880   885

tat aac cag gag ctg gaa cag cag gag tat cat gac ctc ttt gag ctg   3041

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Tyr Asn Gln Glu Leu Glu Gln Gln Glu Tyr His Asp Leu Phe Glu Leu
886             891             896                 901

aag ccc tag aggaagg ctgggcccgt acgtcctgca gaatgtccac cttggagatg      3097
Lys Pro  *
902

gacgaacggg tgtcttaacc tcagctctgc tggaggcctc tcccttaagg ggctgtcttt    3157

gttctccttg gcctgtgtgg gctggcttga gtgcatgttg tctttattcc ctgtatagcg    3217

ctgaagagca tcacctgcac cattgatttt gggggtcggg ggaatactca aggatgagca    3277

gatggggcct gcccgtctac gtgtgcaact ggcagtccag gagctctggg tttctgataa    3337

caggatctcc tttgggctct tgaggttggg gagaagcatt aggattacac agaggagcta    3397

ctgggactta gaaggaaccc tggctgcctg aactgtggcc gtgtctggga ggcgaggcca    3457

cgacaggcct caagcctcag atgctgctcc acgagagcca tcttccccag tggagtgcct    3517

gcctcccctg ctaggcccgt ttccctgaag gagctggccg tactggccgt gggcccagtc    3577

ctgggaggag cagcacagcc ttgcccaggc ccagtccaca gagccagcag cttgggttga    3637

gatgaatgat gtgttcacaa atgaggggat ttcccttctg gactaaactg aaggagaggc    3697

ttgttgcttt ccagaggtgt gtggctctta agttgacatc agcttttccc cttgtgggtg    3757

gttctttagc tctcctgtca caccattcgg gtgtcctaat gtagggacaa gagcaagcct    3817

gctgctcagg ccccctggcg aggcttcacc tcactgtgga aggggggcgtc ctgcagctgg    3877

ttagtcttag gcctggtggc tgatcacttg tggggtcagt ctccagcacc cagcgctccc    3937

acaagccttg ccaaggaagg cctgcttttc agccacaaac ttcaggaaac tcatccccccc    3997

gctccccaaa gtgttgttgc tggccctggg cttgtgtggc tcctgaggat tgggaatttc    4057

aaataattgc aatacctgag ttagaattcc ttctaatggc atcgttttaa gctggaccat    4117

aaagcagagg ggaattacaa gtgtgtccca tgcctgacct tcataattgg tgtgggggac    4177

aggggagtca cagccactga tatttaggtg atgtctctta ggacttcagt gcctcagcta    4237

cctgaactgt aaatgttttc tgaatttcac atattttttt ttgcatgcct taggaagaag    4297

cacataggta aaaccagcag tttccagtaa tataggggggt ttttgagcaa ggcccctgga    4357

gcagcggaga gacaagatgg agcacatgta gtctgtgtgc ctggtcacac agaggcctgc    4417

atgcaagtag caaagcagct ctcaagggct tgtcagtaaa atatattaga aaaaaaaaa     4477

a                                                                    4478
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1864

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<213> Homo sapiens

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<220>
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<223> n = a,t,c or g

<400> 561

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cgcccacgcg tccgagaaga t atg gat cac aaa tct cca ggc aac aaa gga      111
                         Met Asp His Lys Ser Pro Gly Asn Lys Gly
                          1               5

tca ttg gtt tat gca gga att aaa tca att gta aag tca tcg ttg gga      159
Ser Leu Val Tyr Ala Gly Ile Lys Ser Ile Val Lys Ser Ser Leu Gly
 11                  16                  21                  26

atg gtg gaa agc agc aga cat aat tgg agt ggg ttg gat aag caa agt      207
Met Val Glu Ser Ser Arg His Asn Trp Ser Gly Leu Asp Lys Gln Ser
 27                  32                  37                  42

gat att caa aat tta aat gaa gag aga atc tta gct tta cag ctt tgt      255
Asp Ile Gln Asn Leu Asn Glu Glu Arg Ile Leu Ala Leu Gln Leu Cys
 43                  48                  53                  58

ggg tgg ata aag aaa gga acg gat gta gac gtg ggg cca ttt ttg aac      303
Gly Trp Ile Lys Lys Gly Thr Asp Val Asp Val Gly Pro Phe Leu Asn
 59                  64                  69                  74

tcc ctt gta caa gaa ggg gaa tgg gaa aga gct gct gct gtg gca ttg      351
Ser Leu Val Gln Glu Gly Glu Trp Glu Arg Ala Ala Ala Val Ala Leu
 75                  80                  85                  90

ttc aac ttg gat att cgc cga gca atc caa atc ctg aat gaa ggg gca      399
Phe Asn Leu Asp Ile Arg Arg Ala Ile Gln Ile Leu Asn Glu Gly Ala
 91                  96                  101                 106

tct tct gaa aaa gga gat ctg aat ctc aat gtg gta gca atg gct tta      447
Ser Ser Glu Lys Gly Asp Leu Asn Leu Asn Val Val Ala Met Ala Leu
107                 112                 117                 122

tcg ggt tat acg gat gag aag aac tcc ctt tgg aga gaa atg tgt agc      495
Ser Gly Tyr Thr Asp Glu Lys Asn Ser Leu Trp Arg Glu Met Cys Ser
123                 128                 133                 138

aca ctg cga tta cag cta aat aac ccg tat ttg tgt gtc atg ttt gca      543
Thr Leu Arg Leu Gln Leu Asn Asn Pro Tyr Leu Cys Val Met Phe Ala
139                 144                 149                 154
```

1865

```
ttt ctg aca agt gaa aca gga tct tac gat gga gtt ttg tat gaa aac          591
Phe Leu Thr Ser Glu Thr Gly Ser Tyr Asp Gly Val Leu Tyr Glu Asn
155             160             165                 170

aaa gtt gca gta cgt gac aga gtg gca ttt gct tgt aaa ttc ctt agt          639
Lys Val Ala Val Arg Asp Arg Val Ala Phe Ala Cys Lys Phe Leu Ser
171             176             181                 186

gat act cag tta aat aga tac atc gaa aag ttg acc aat gaa atg aaa          687
Asp Thr Gln Leu Asn Arg Tyr Ile Glu Lys Leu Thr Asn Glu Met Lys
187             192             197                 202

gag gct gga aat ttg gaa gga att ttg ctt aca ggc ctt act aaa gat          735
Glu Ala Gly Asn Leu Glu Gly Ile Leu Leu Thr Gly Leu Thr Lys Asp
203             208             213                 218

gga gtg gac tta atg gag agt tat gtt gat aga act gga gat gtt caa          783
Gly Val Asp Leu Met Glu Ser Tyr Val Asp Arg Thr Gly Asp Val Gln
219             224             229                 234

aca gca agt tac tgt atg tta cag ggt tca cct tta gat gtt ctt aaa          831
Thr Ala Ser Tyr Cys Met Leu Gln Gly Ser Pro Leu Asp Val Leu Lys
235             240             245                 250

gat gaa agg gtt cag tac tgg att gag aat tat aga aat tta tta gat          879
Asp Glu Arg Val Gln Tyr Trp Ile Glu Asn Tyr Arg Asn Leu Leu Asp
251             256             261                 266

gcc tgg agg ttt tgg cat aaa cga gct gaa ttt gat att cac agg agt          927
Ala Trp Arg Phe Trp His Lys Arg Ala Glu Phe Asp Ile His Arg Ser
267             272             277                 282

aag ttg gat ccc agt tcc aag cct tta gca caa gtt ttt gtg agt tgc          975
Lys Leu Asp Pro Ser Ser Lys Pro Leu Ala Gln Val Phe Val Ser Cys
283             288             293                 298

aat ttc tgt ggc aag tca atc tcc tac agc tgt tca gct gtg cct cat         1023
Asn Phe Cys Gly Lys Ser Ile Ser Tyr Ser Cys Ser Ala Val Pro His
299             304             309                 314

cag ggc aga ggt ttt agt cag tat ggt gtg agt ggc tca cca acg aaa         1071
Gln Gly Arg Gly Phe Ser Gln Tyr Gly Val Ser Gly Ser Pro Thr Lys
315             320             325                 330

tct aaa gtc aca agt tgt cct ggc tgt cga aaa cca ctt cct cga tgt         1119
Ser Lys Val Thr Ser Cys Pro Gly Cys Arg Lys Pro Leu Pro Arg Cys
331             336             341                 346

gcg ctt tgt ctc att aat atg gga aca cca gtt tct agc tgt cct gga         1167
Ala Leu Cys Leu Ile Asn Met Gly Thr Pro Val Ser Ser Cys Pro Gly
347             352             357                 362

gga acc aaa tca gat gaa aaa gtg gac ttg agc aag gac aaa aaa tta         1215
Gly Thr Lys Ser Asp Glu Lys Val Asp Leu Ser Lys Asp Lys Lys Leu
363             368             373                 378
```

1866

```
gcc caa ttt aac aac tgg ttt aca tgg tgt cat aat tgc agg cac ggt      1263
Ala Gln Phe Asn Asn Trp Phe Thr Trp Cys His Asn Cys Arg His Gly
379             384             389                 394

gga cat gct gga cat atg ctt agt tgg ttc agg gac cat gca gag tgc      1311
Gly His Ala Gly His Met Leu Ser Trp Phe Arg Asp His Ala Glu Cys
395             400             405                 410

cct gtg tct gca tgc acg tgt aaa tgt atg cag ttg gat aca acg ggg      1359
Pro Val Ser Ala Cys Thr Cys Lys Cys Met Gln Leu Asp Thr Thr Gly
411             416             421                 426

aat ctg gta cct gca gag act gtc cag cca taa aatgttac caccttaaga      1410
Asn Leu Val Pro Ala Glu Thr Val Gln Pro  *
427             432             437

gaacccttca agtgtggagc tttctagtag gtgtccttca tagctcagaa acatacctca    1470

gaacaagcca ttcatgactt acctgtaatg ggaaaataaa tcattctatc agatcaaaaa    1530

aaaaaaa                                                               1537




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    <400> 562
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cttccatcct ggcctagagc ggcccttaaa gtgccaggga gaggagggcg ggtggggacc    120

actccagaat tggccgctgg cggtatc    atg gcg acc cgg aac ccc cct ccc     171
                                Met Ala Thr Arg Asn Pro Pro Pro
                                 1               5

caa gac tat gaa agt gat gac gac tct tat gaa gtg ttg gat tta act      219
Gln Asp Tyr Glu Ser Asp Asp Asp Ser Tyr Glu Val Leu Asp Leu Thr
 9               14                  19                  24

gag tat gca aga aga cac cag tgg tgg aat cga gtg ttt ggc cac agt      267
Glu Tyr Ala Arg Arg His Gln Trp Trp Asn Arg Val Phe Gly His Ser
 25              30                  35                  40

tcg gga cct atg gta gaa aaa tac tca gta gct acc cag att gta atg      315
Ser Gly Pro Met Val Glu Lys Tyr Ser Val Ala Thr Gln Ile Val Met
 41              46                  51                  56

ggt ggc gtt act ggc tgg tgt gca gga ttt ctg ttc cag aaa gtt gga      363
Gly Gly Val Thr Gly Trp Cys Ala Gly Phe Leu Phe Gln Lys Val Gly
```

1867

```
aaa ctt gca gca act gca gta ggt ggt ggc ttt ctt ctt ctt cag att    411
Lys Leu Ala Ala Thr Ala Val Gly Gly Gly Phe Leu Leu Leu Gln Ile
73              78              83              88

gct agt cat agt ggc tat gtg cag att gac tgg aag aga gtt gaa aaa    459
Ala Ser His Ser Gly Tyr Val Gln Ile Asp Trp Lys Arg Val Glu Lys
89              94              99              104

gat gta aat aaa gca aaa aga cag att aag aaa cga gcg aac aaa gca    507
Asp Val Asn Lys Ala Lys Arg Gln Ile Lys Lys Arg Ala Asn Lys Ala
105             110             115             120

gca cct gaa atc aac aat tta att gaa gaa gca aca gaa ttt atc aag    555
Ala Pro Glu Ile Asn Asn Leu Ile Glu Glu Ala Thr Glu Phe Ile Lys
121             126             131             136

cag aac att gtg ata tcc agt gga ttt gtg gga ggc ttt ttg ctc gga    603
Gln Asn Ile Val Ile Ser Ser Gly Phe Val Gly Gly Phe Leu Leu Gly
137             142             147             152

ctt gca tct taa gga catgaatatt ctcccataac ggattcaact atgagaagag   658
Leu Ala Ser *
153

aagtggcagc aataaggcag tctctcaaaa gtcatactgc cagagtctct agggcaagga   718

gaaacaacta gctggacaat actcaattca caacttagca ttttgccatc tgaagcttgg   778

caaactagta tctgctgtaa acaacctat atggtatgtg aaccgtagta ttcctgagca   838

aaacgtggct ttcatcgctt tgtaaaaatt tgcatctgtt tagaaactag cctataaaat   898

atcaccattg gatgtagata tggagagaaa agaaatatgt tgggtttatt gcttagcgaa   958

.atattctctt tttatttaaa taaaatgttc ttcattgtgt tttatggtat gtgtccataa  1018

tttaaaattc atgttatagt ttcagtatta aggctgactt tttttttta agatatgttt   1078

gcaataagtt aaaaaactgt aatacccttt tgtggaaagc tttagaaatg atataattat   1138

taaagatatt aaacagacaa aaaaaaaaaa                                    1168
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<212> DNA
<213> Homo sapiens

<220>
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<400> 563
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                  Met Ala Thr His Gly Gly Ser Arg Leu Asn Leu Ser
                   1               5                  10

ttg gta ccg agc tcg gat cca cta gtc cag tgt ggt gga att cac aaa          97
Leu Val Pro Ser Ser Asp Pro Leu Val Gln Cys Gly Gly Ile His Lys
 13              18                  23                  28

gga gcg gcg gcc ggg agc gga ctt acc tta cct tct ctg cct tcg gcg        145
Gly Ala Ala Ala Gly Ser Gly Leu Thr Leu Pro Ser Leu Pro Ser Ala
 29              34                  39                  44

cgc ttc tca gcc ggg ccg ccg acc caa agg agc cgt ccg act atg tct        193
Arg Phe Ser Ala Gly Pro Pro Thr Gln Arg Ser Arg Pro Thr Met Ser
 45              50                  55                  60

aac atg gag aaa cac ctg ttc aac ctg aag ttc gcg gcc aaa gaa ctg        241
Asn Met Glu Lys His Leu Phe Asn Leu Lys Phe Ala Ala Lys Glu Leu
 61              66                  71                  76

agt agg agt gcc aaa aaa tgc gat aag gag gaa aag gcc gaa aag gcc        289
Ser Arg Ser Ala Lys Lys Cys Asp Lys Glu Glu Lys Ala Glu Lys Ala
 77              82                  87                  92

aaa att aaa aag gcc att cag aag ggc aac atg gaa gtt gcg agg ata        337
Lys Ile Lys Lys Ala Ile Gln Lys Gly Asn Met Glu Val Ala Arg Ile
 93              98                  103                 108

cac gcc gaa aat gcc atc cgc cag aag aac cag gcg gtg aat ttc ttg        385
His Ala Glu Asn Ala Ile Arg Gln Lys Asn Gln Ala Val Asn Phe Leu
 109             114                 119                 124

aga atg agt gcg cga gtc gat gca gtg gct gcc agg gtc cag acg gcg        433
Arg Met Ser Ala Arg Val Asp Ala Val Ala Ala Arg Val Gln Thr Ala
 125             130                 135                 140

gtg acg atg ggc aag gtg acc aag tcg atg gct ggt gtg gtt aag tcg        481
Val Thr Met Gly Lys Val Thr Lys Ser Met Ala Gly Val Val Lys Ser
 141             146                 151                 156

atg gat gcg aca ttg aag acc atg aat ctg gag aag att tct gct ttg        529
Met Asp Ala Thr Leu Lys Thr Met Asn Leu Glu Lys Ile Ser Ala Leu
 157             162                 167                 172

atg gac aaa ttc gag cac cag ttt gag act ctg gac gtc cag acg cag        577
Met Asp Lys Phe Glu His Gln Phe Glu Thr Leu Asp Val Gln Thr Gln
 173             178                 183                 188

caa atg gaa gac acg atg agc agc acg acg acg ctc acc act ccc cag        625
Gln Met Glu Asp Thr Met Ser Ser Thr Thr Thr Leu Thr Thr Pro Gln
 189             194                 199                 204

aac caa gtg gat atg ctg ctc cag gaa atg gca gat gag gcg ggc ctc        673
Asn Gln Val Asp Met Leu Leu Gln Glu Met Ala Asp Glu Ala Gly Leu
 205             210                 215                 220

gac ctc aac atg gag ctg ccg cag ggc cag acc ggc tcc gtg ggc acg        721
```

```
Asp Leu Asn Met Glu Leu Pro Gln Gly Gln Thr Gly Ser Val Gly Thr
221             226              231              236

agc gtg gct tcg gcg gag cag gat gaa ctg tct cag aga ctg gcc cgc     769
Ser Val Ala Ser Ala Glu Gln Asp Glu Leu Ser Gln Arg Leu Ala Arg
237             242              247              252

ctt cgg gat caa gtg tga cggcag aacccgctct gaggtttcct ggccatagcc     823
Leu Arg Asp Gln Val *
253             258

accctttgaa atgctctctg tgtgttagag agatactata ccctagaaac tctgaacacg     883

ccagaatgct gaaatgccct tctacctttg ggtttacagc cccctccaca taaattaaga     943

aattcagtat ttctgcactc ttagctggat tctaaagttc tgtatagctc gtaatgatgg    1003

tatttttata gcagcctttt aacagaacta gttaatttcg tgtatatgaa tctttctcga    1063

agatctggtc aaaactgtat tcagtttcct gcccagaatg atcagattga aggtggttgg    1123

tttttattat tatttagtgt gattgatagt atctagaatg gcaggtggtg cataaaagtt    1183

aaagagaggg gaaagattac ttagtttggt tatacagtta taaacaccat gcagtgtatt    1243

cggtggactg tgctatttct gtttatcctt tgggttttgg ttttgttttt ttttttttgc    1303

cttcacagtg agactgcaaa tgattgttct cataacgtat attattaata aatgtggtcc    1363

tataatttat actgaaatta ccttaggata tttttgcata atactctctt actgcttaca    1423

ttctataaat ttttcacgtg ataattgtct ttgcgtaact gggaaaaatg ccgaataact    1483

tcctttatta tctggaaaaa ttaaatttgt tcattatat tttctactta ctaaattgag    1543

tttttaaaaa gacttagtgt gacatttgac agtgtctttc aaacgaactt ctctaacaag    1603

tttatagtta ttttcctgtt tcaacactat tagaagtctt ataaattatg ctaattagca    1663

tggcagtcat gttacacact cttaacattg ccaaagaact gttgatttcg tttgagaaaa    1723

ccctgggact gtgtgtgtgt aggttttgtt ttgattttaa caaccaaaaa tagaaataaa    1783

attagaactg cgttttaagt tctaatttgc atttattaat ttgtccaaaa gcaagaactc    1843

ttggaaatcc ttgaaaatat aagctggaat gttttactta gccatgcaag tcatttatgt    1903

atacatccag ccagctggaa atctgagaag taaagaggta ggactggaag gaaggagaaa    1963

gcttgagtct ttaaggctag agcccagctg tgctgcctgc catcttctca ggaatggcag    2023

tgcgtatttt ctggctgaaa agtaaagcat gtatccaccg cttctcata gcctcgaaac    2083

atggagaaaa gcaacttgct tttgccttgg caagcatgct aacctaagtt aattcaagtt    2143

ttttttaact tacccttttcc ttcactggaa gattttttcca taagagaatt ccattgtttc   2203
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agaaaataat tatagggggcc cttccaagtt ctttgaaaga ttcataacca actattcact    2263

attataacat gtttcccagt gtaaatgagt aaggaaaaaa aaagtgtaac aggtgcgtgc    2323

agatgaggag tgaccctcat atttaagtta ttttatattt gactggacat tgttcagaag    2383

tgtgctttaa gggacacttg ttggttgtct gcccagcatc tctcaagaat atccctcctg    2443

tcctccacat ggttgtgcag ggccatgtgt gaagacagca tgagtcttaa cccctctttt    2503

attttatttt tgagacagag tctcgctctg ttgcccaggc tggagtgctg tggcgcgatc    2563

tctgctcact gcaacctcca cctcccgggt tcaagtgatt ctcctgcctc agcctgccga    2623

gtagctggaa ttacaggtgt gcaccaccat gcccagctag ttttttttgta tttttagtag    2683

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ccctctttag attggaaaaa ataattacaa ctttaaaaat agcttagtgt tgaacccttt    2863

ggtaaactaa agacccttt ataatgcaca tattcccaac aaaattaata tattttgtga    2923

gattaaacaa tgcttgtata tgcttgaact ttcttaaaat atgtccatgt catactatta    2983

tgaatgtaca ttttatgag tcataaatat tattttcaaa agca                     3027



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      <212> DNA
      <213> Homo sapiens

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      <222> (559)..(957)

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ttttttttttt tttttgaatg tgagccaaag atttatttct tcatttcttg catttgaaat    180

actcttcaat gacatccttg gcctgagact ccttgccata gtccttaact actacacaac     240

tgcaaccaac cactttacgg ggtttcccct ctctgtcaat tttacaaagg cctacccatt     300

ctcctagttt cttgttgtca tcaaccttaa ttaggttgat ttggtgttca gcacaaaggg     360

cctccaccaa cttgacatac ataggctcat cacagttgga tgcaagcaca caaagatggg     420

cttggcgctt gtctaaggct ttggcagctt cgcgaattcc acgtgctagg ccatcgtgga     480
```

1871

tgagggcagt cttcagaacc tcttgtaaag cagtattaac gtccattaca cctccagcag   540

caatgccttc ctcggcca tgg cgg tgg gtt acg ggt gaa gct gaa tct tga   591
                     Met Ala Glu Glu Gly Ile Ala Ala Gly Gly Val
                      1   5

acg cac cca agc ctc cgc ctc cgc gcg act cgg cgg cat tac tag tga   639
Met Asp Val Asn Thr Ala Leu Gln Glu Val Leu Lys Thr Ala Leu Ile
 12   17   22   27

tta cta gtg aat tca cta gta ata tta cta gtg aat cac tag taa tat   687
His Asp Gly Leu Ala Arg Gly Ile Arg Glu Ala Ala Lys Ala Leu Asp
 28   33   38   43

tac tag tga att cac tag taa tgt cgc gcg gag gcg gag gct tgg gtg   735
Lys Arg Gln Ala His Leu Cys Val Leu Ala Ser Asn Cys Asp Glu Pro
 44   49   54   59

cgt tca aga ttc agc ttc acc cgt aac cca ccg cca tgg ccg agg aag   783
Met Tyr Val Lys Leu Val Glu Ala Leu Cys Ala Glu His Gln Ile Asn
 60   65   70   75

gca ttg ctg ctg gag gtg taa tgg acg tta ata ctg ctt tac aag agg   831
Leu Ile Lys Val Asp Asp Asn Lys Lys Leu Gly Glu Trp Val Gly Leu
 76   81   86   91

ttc tga aga ctg ccc tca tcc acg atg gcc tag cac gtg gaa ttc gcg   879
Cys Lys Ile Asp Arg Glu Gly Lys Pro Arg Lys Val Val Gly Cys Ser
 92   97   102   107

aag ctg cca aag cct tag aca agc gcc aag ccc atc ttt gtg tgc ttg   927
Cys Val Val Val Lys Asp Tyr Gly Lys Glu Ser Gln Ala Lys Asp Val
 108   113   118   123

cat cca act gtg atg agc cta tgt atg tca a gttggtggag gccctttgtg   978
Ile Glu Glu Tyr Phe Lys Cys Lys Lys *
 124   129

ctgaacacca aatcaaccta attaaggttg atgacaacaa gaaactagga gaatgggtag   1038

gcctttgtaa aattgacaga gaggggaaac cccgtaaagt ggttggttgc agttgtgtag   1098

tagttaagga ctatggcaag gagtctcagg ccaaggatgt cattgaagag tatttcaaat   1158

gcaagaaatg aagaaataaa tctttggctc acaaaaaaaa aa   1200

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        <222> (83)..(4666)

            1872

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tgaaattgtg tttgtagctg ac atg aca aaa aat gat gct cct gct tta gtc     112
                         Met Thr Lys Asn Asp Ala Pro Ala Leu Val
                          1               5

att aca aca caa tgt gaa att tgc tat aaa ggt aac ctt gaa aat agt      160
Ile Thr Thr Gln Cys Glu Ile Cys Tyr Lys Gly Asn Leu Glu Asn Ser
 11              16              21              26

aca atg act gct gcc att aaa gat ctc caa gtg aga gcc tgc ccg ttt      208
Thr Met Thr Ala Ala Ile Lys Asp Leu Gln Val Arg Ala Cys Pro Phe
 27              32              37              42

ctt cca gtc aag aga aaa ggc aaa atc act act gtt ttg cag ccc tgt      256
Leu Pro Val Lys Arg Lys Gly Lys Ile Thr Thr Val Leu Gln Pro Cys
 43              48              53              58

gac ttg ttt tat caa act act cag aaa ggt aca gat cca caa gtg atc      304
Asp Leu Phe Tyr Gln Thr Thr Gln Lys Gly Thr Asp Pro Gln Val Ile
 59              64              69              74

gat atg tca gta aaa tcc ctg aca cta aag gtt tca cca gtt att ata      352
Asp Met Ser Val Lys Ser Leu Thr Leu Lys Val Ser Pro Val Ile Ile
 75              80              85              90

aat act atg att acc ata act tca gca ctg tat aca act aag gaa acc      400
Asn Thr Met Ile Thr Ile Thr Ser Ala Leu Tyr Thr Thr Lys Glu Thr
 91              96              101             106

atc cca gaa gaa acg gct tct tct act gca cat tta tgg gaa aag aag      448
Ile Pro Glu Glu Thr Ala Ser Ser Thr Ala His Leu Trp Glu Lys Lys
107             112             117             122

gat aca aag act tta aaa atg tgg ttt ctt gaa gaa tca aat gaa act      496
Asp Thr Lys Thr Leu Lys Met Trp Phe Leu Glu Glu Ser Asn Glu Thr
123             128             133             138

gaa aaa ata gct ccc aca act gaa ttg gta ccc aaa ggc gag atg ata      544
Glu Lys Ile Ala Pro Thr Thr Glu Leu Val Pro Lys Gly Glu Met Ile
139             144             149             154

aaa atg aac att gat tct att ttt ata gtt ctt gag gct gga att ggt      592
Lys Met Asn Ile Asp Ser Ile Phe Ile Val Leu Glu Ala Gly Ile Gly
155             160             165             170

cat aga aca gta cct atg ctt ctg gca aag tca cgt ttt tca ggg gaa      640
His Arg Thr Val Pro Met Leu Leu Ala Lys Ser Arg Phe Ser Gly Glu
171             176             181             186

ggc aaa aac tgg agt tcc cta ata aat ctg cac tgt cag ctt gag cta      688
Gly Lys Asn Trp Ser Ser Leu Ile Asn Leu His Cys Gln Leu Glu Leu
187             192             197             202

gaa gtg cat tat tat aat gaa atg ttt ggt gta tgg gag cct ttg ctt      736
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1873

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Glu Val His Tyr Tyr Asn Glu Met Phe Gly Val Trp Glu Pro Leu Leu
203                 208                 213                 218

gaa ccc tta gaa att gat cag act gag gat ttt aga cca tgg aat ctt      784
Glu Pro Leu Glu Ile Asp Gln Thr Glu Asp Phe Arg Pro Trp Asn Leu
219                 224                 229                 234

ggt atc aag atg aaa aag aaa gca aaa atg gcc att gtt gag tca gat      832
Gly Ile Lys Met Lys Lys Lys Ala Lys Met Ala Ile Val Glu Ser Asp
235                 240                 245                 250

cct gaa gaa gaa aac tac aaa gtg cca gaa tat aaa act gtc atc agt      880
Pro Glu Glu Glu Asn Tyr Lys Val Pro Glu Tyr Lys Thr Val Ile Ser
251                 256                 261                 266

ttc cat tca aaa gac caa tta aac att aca tta tcc aaa tgt ggt ctt      928
Phe His Ser Lys Asp Gln Leu Asn Ile Thr Leu Ser Lys Cys Gly Leu
267                 272                 277                 282

gta atg tta aac aat tta gtc aag gca ttt aca gaa gct gcc act gga      976
Val Met Leu Asn Asn Leu Val Lys Ala Phe Thr Glu Ala Ala Thr Gly
283                 288                 293                 298

tct tca gct gac ttc gta aag gat cta gca cca ttt atg att tta aat     1024
Ser Ser Ala Asp Phe Val Lys Asp Leu Ala Pro Phe Met Ile Leu Asn
299                 304                 309                 314

tcc ctt gga ctt act att tct gtt tcg cca agt gat tct ttt agt gta     1072
Ser Leu Gly Leu Thr Ile Ser Val Ser Pro Ser Asp Ser Phe Ser Val
315                 320                 325                 330

ctc aac att cct atg gca aaa tca tat gta ttg aaa aat gga gaa agt     1120
Leu Asn Ile Pro Met Ala Lys Ser Tyr Val Leu Lys Asn Gly Glu Ser
331                 336                 341                 346

tta agt atg gat tat atc cga acc aag gac aat gat cat ttc aat gca     1168
Leu Ser Met Asp Tyr Ile Arg Thr Lys Asp Asn Asp His Phe Asn Ala
347                 352                 357                 362

atg acc agc cta agc agc aaa ctc ttc ttc att ctt ctt aca cct gtt     1216
Met Thr Ser Leu Ser Ser Lys Leu Phe Phe Ile Leu Leu Thr Pro Val
363                 368                 373                 378

aac cat tct act gct gat aag att cct tta aca aaa gtg gga cga cgt     1264
Asn His Ser Thr Ala Asp Lys Ile Pro Leu Thr Lys Val Gly Arg Arg
379                 384                 389                 394

ctg tac act gta aga cac aga gag tct ggc gtt gaa aga tct att gtt     1312
Leu Tyr Thr Val Arg His Arg Glu Ser Gly Val Glu Arg Ser Ile Val
395                 400                 405                 410

tgt caa att gat aca gta gaa gga agt aag aag gtc aca att cgc tcc     1360
Cys Gln Ile Asp Thr Val Glu Gly Ser Lys Lys Val Thr Ile Arg Ser
411                 416                 421                 426

cca gtg cag ata aga aat cat ttt tca gtc cca ctg tct gtt tac gaa     1408
Pro Val Gln Ile Arg Asn His Phe Ser Val Pro Leu Ser Val Tyr Glu
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1874

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ggg gat acc tta ttg gga act gcc tca cct gaa aat gaa ttc aac ata      1456
Gly Asp Thr Leu Leu Gly Thr Ala Ser Pro Glu Asn Glu Phe Asn Ile
443                 448             453                 458


cca tta gga tct tac cga tca ttc att ttt ctg aag cca gaa gat gag      1504
Pro Leu Gly Ser Tyr Arg Ser Phe Ile Phe Leu Lys Pro Glu Asp Glu
459                 464             469                 474


aac tat caa atg tgt gaa gga att gac ttt gaa gag att ata aaa aat      1552
Asn Tyr Gln Met Cys Glu Gly Ile Asp Phe Glu Glu Ile Ile Lys Asn
475                 480             485                 490


gat ggt gct ctt cta aag aag aaa tgt aga tct aaa aac cct tct aag      1600
Asp Gly Ala Leu Leu Lys Lys Lys Cys Arg Ser Lys Asn Pro Ser Lys
491                 496             501                 506


gaa tca ttt ctc att aat att gtt cca gaa aaa gat aat tta aca tct      1648
Glu Ser Phe Leu Ile Asn Ile Val Pro Glu Lys Asp Asn Leu Thr Ser
507                 512             517                 522


cta tca gtg tat tca gaa gat ggt tgg gat tta cca tac ata atg cat      1696
Leu Ser Val Tyr Ser Glu Asp Gly Trp Asp Leu Pro Tyr Ile Met His
523                 528             533                 538


ttg tgg cca cct atc ctg ctc cga aat ctt ctt cct tac aaa att gct      1744
Leu Trp Pro Pro Ile Leu Leu Arg Asn Leu Leu Pro Tyr Lys Ile Ala
539                 544             549                 554


tat tat ata gag gga att gaa aat tcg gtt ttt act cta agt gaa gga      1792
Tyr Tyr Ile Glu Gly Ile Glu Asn Ser Val Phe Thr Leu Ser Glu Gly
555                 560                 565             570


cat tca gcc cag att tgt act gca cag ttg ggt aaa gcc agg cta cat      1840
His Ser Ala Gln Ile Cys Thr Ala Gln Leu Gly Lys Ala Arg Leu His
571                 576             581                 586


tta aaa tta ctt gac tat ctc aat cac gat tgg aaa agt gaa tat cac      1888
Leu Lys Leu Leu Asp Tyr Leu Asn His Asp Trp Lys Ser Glu Tyr His
587                 592             597                 602


ata aag cct aat cag caa gac att agt ttt gtc agt ttt act tgt gtt      1936
Ile Lys Pro Asn Gln Gln Asp Ile Ser Phe Val Ser Phe Thr Cys Val
603                 608             613                 618


aca gaa atg gaa aag act gat tta gat att gct gtc cat atg act tac      1984
Thr Glu Met Glu Lys Thr Asp Leu Asp Ile Ala Val His Met Thr Tyr
619                 624             629                 634


aat act ggt cag aca gtt gtg gca ttt cat agt cct tat tgg atg gtc      2032
Asn Thr Gly Gln Thr Val Val Ala Phe His Ser Pro Tyr Trp Met Val
635                 640             645                 650


aat aaa act ggc cgc atg tta cag tac aaa gca gac gga att cat cga      2080
Asn Lys Thr Gly Arg Met Leu Gln Tyr Lys Ala Asp Gly Ile His Arg
651                 656             661             666
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aag cat cca cct aat tat aaa aag cca gtt ctc ttt tct ttt cag cca        2128
Lys His Pro Pro Asn Tyr Lys Lys Pro Val Leu Phe Ser Phe Gln Pro
667             672             677             682

aat cac ttt ttt aat aac aat aag gtt caa ctt atg gta act gat agt        2176
Asn His Phe Phe Asn Asn Asn Lys Val Gln Leu Met Val Thr Asp Ser
683             688             693             698

gag ttg tcc aat cag ttt tca att gat act gtt ggt agt cat gga gct        2224
Glu Leu Ser Asn Gln Phe Ser Ile Asp Thr Val Gly Ser His Gly Ala
699             704             709             714

gtt aaa tgt aaa ggc ctg aaa atg gac tat caa gtt ggt gtc act ata        2272
Val Lys Cys Lys Gly Leu Lys Met Asp Tyr Gln Val Gly Val Thr Ile
715             720             725             730

gac ctg agc agt ttt aac att act aga att gtg aca ttt acc cct ttt        2320
Asp Leu Ser Ser Phe Asn Ile Thr Arg Ile Val Thr Phe Thr Pro Phe
731             736             741             746

tat atg att aaa aac aaa agc aaa tac cat ata tca gtg gct gaa gaa        2368
Tyr Met Ile Lys Asn Lys Ser Lys Tyr His Ile Ser Val Ala Glu Glu
747             752             757             762

gga aat gat aaa tgg ctc tct ctt gat ttg gag cag tgt atc ccc ttt        2416
Gly Asn Asp Lys Trp Leu Ser Leu Asp Leu Glu Gln Cys Ile Pro Phe
763             768             773             778

tgg cct gag tat gct tct agt aaa ctt ctt att caa gtc gaa agg agt        2464
Trp Pro Glu Tyr Ala Ser Ser Lys Leu Leu Ile Gln Val Glu Arg Ser
779             784             789             794

gaa gat cct ccc aaa agg ata tat ttt aac aag cag gaa aat tgt att        2512
Glu Asp Pro Pro Lys Arg Ile Tyr Phe Asn Lys Gln Glu Asn Cys Ile
795             800             805             810

cta ttg cgt cta gat aac gag ctt gga ggt att ata gca gaa gtg aat        2560
Leu Leu Arg Leu Asp Asn Glu Leu Gly Gly Ile Ile Ala Glu Val Asn
811             816             821             826

ttg gcc gag cat tct aca gtt att aca ttt tta gat tat cat gat gga        2608
Leu Ala Glu His Ser Thr Val Ile Thr Phe Leu Asp Tyr His Asp Gly
827             832             837             842

gca gct aca ttc ctc tta ata aat cac aca aag aat gaa ctt gtt caa        2656
Ala Ala Thr Phe Leu Leu Ile Asn His Thr Lys Asn Glu Leu Val Gln
843             848             853             858

tac aat caa agt tct ctc agt gaa ata gaa gat tcc ctc cct cct ggt        2704
Tyr Asn Gln Ser Ser Leu Ser Glu Ile Glu Asp Ser Leu Pro Pro Gly
859             864             869             874

aaa gcc gtg ttt tat aca tgg gct gat ccg gtg ggc tct aga agg ctg        2752
Lys Ala Val Phe Tyr Thr Trp Ala Asp Pro Val Gly Ser Arg Arg Leu
875             880             885             890
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1876

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aag tgg aga tgt aga aaa agc cat ggt gaa gta aca cag aag gat gat        2800
Lys Trp Arg Cys Arg Lys Ser His Gly Glu Val Thr Gln Lys Asp Asp
891                 896                 901                 906

atg atg atg cct ata gat ttg ggg gaa aag aca ata tat tta gtt tca        2848
Met Met Met Pro Ile Asp Leu Gly Glu Lys Thr Ile Tyr Leu Val Ser
907             912                 917                 922

ttc ttt gaa ggt tta caa cgc att att tta ttc act gaa gat cca agg        2896
Phe Phe Glu Gly Leu Gln Arg Ile Ile Leu Phe Thr Glu Asp Pro Arg
923             928                 933                 938

gta ttt aaa gta aca tat gaa agt gag aaa gca gag tta gca gag caa        2944
Val Phe Lys Val Thr Tyr Glu Ser Glu Lys Ala Glu Leu Ala Glu Gln
939             944                 949                 954

gaa att gca gtg gca tta caa gat gtt gga att tct ctt gtc aac aat        2992
Glu Ile Ala Val Ala Leu Gln Asp Val Gly Ile Ser Leu Val Asn Asn
955             960                 965                 970

tac acg aag caa gaa gta gcc tat ata ggc att aca agt tct gat gtg        3040
Tyr Thr Lys Gln Glu Val Ala Tyr Ile Gly Ile Thr Ser Ser Asp Val
971             976                 981                 986

gtt tgg gaa aca aag ccc aag aag aag gca aga tgg aag cca atg agt        3088
Val Trp Glu Thr Lys Pro Lys Lys Lys Ala Arg Trp Lys Pro Met Ser
987             992                 997                 1002

gta aag cac act gag aag tta gag aga gaa ttt aag gaa tat act gaa        3136
Val Lys His Thr Glu Lys Leu Glu Arg Glu Phe Lys Glu Tyr Thr Glu
1003            1008                1013                1018

tct tct cct tca gaa gat aag gtt att cag ttg gac act aat gtt ccg        3184
Ser Ser Pro Ser Glu Asp Lys Val Ile Gln Leu Asp Thr Asn Val Pro
1019            1024                1029                1034

gtt cgc cta acc cct act ggt cat aac atg aaa att ctg cag ccg cat        3232
Val Arg Leu Thr Pro Thr Gly His Asn Met Lys Ile Leu Gln Pro His
1035            1040                1045                1050

gta ata gct cta cga aga aat tat ctt cca gca tta aaa gtg gaa tat        3280
Val Ile Ala Leu Arg Arg Asn Tyr Leu Pro Ala Leu Lys Val Glu Tyr
1051            1056                1061                1066

aac aca tct gca cat caa tca tca ttt aga att cag att tac aga ata        3328
Asn Thr Ser Ala His Gln Ser Ser Phe Arg Ile Gln Ile Tyr Arg Ile
1067            1072                1077                1082

cag atc caa aat cag ata cat ggt gct gta ttt ccc ttt gtg ttt tat        3376
Gln Ile Gln Asn Gln Ile His Gly Ala Val Phe Pro Phe Val Phe Tyr
1083            1088                1093                1098

cct gtt aaa cct cca aag tcg gtc acc atg gat tca gca cca aag ccc        3424
Pro Val Lys Pro Pro Lys Ser Val Thr Met Asp Ser Ala Pro Lys Pro
1099            1104                1109                1114

ttt aca gat gtc agt att gtc atg aga tct gca gga cat tcc cag ata        3472
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1877

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Phe Thr Asp Val Ser Ile Val Met Arg Ser Ala Gly His Ser Gln Ile
1115            1120            1125            1130

tca cgt att aag tat ttc aaa gta ttg att caa gaa atg gat ctc agg     3520
Ser Arg Ile Lys Tyr Phe Lys Val Leu Ile Gln Glu Met Asp Leu Arg
1131            1136            1141            1146

tta gat ctt ggg ttt atc tat gct tta aca gac ctt atg aca gaa gct     3568
Leu Asp Leu Gly Phe Ile Tyr Ala Leu Thr Asp Leu Met Thr Glu Ala
1147            1152            1157            1162

gag gtg act gaa aat aca gag gtt gag ctt ttt cat aaa gat ata gaa     3616
Glu Val Thr Glu Asn Thr Glu Val Glu Leu Phe His Lys Asp Ile Glu
1163            1168            1173            1178

gct ttc aaa gaa gaa tat aaa aca gcc tca tta gta gat caa tca caa     3664
Ala Phe Lys Glu Glu Tyr Lys Thr Ala Ser Leu Val Asp Gln Ser Gln
1179            1184            1189            1194

gtc agc ctc tat gaa tat ttt cat ata tct cct atc aag tta cat tta     3712
Val Ser Leu Tyr Glu Tyr Phe His Ile Ser Pro Ile Lys Leu His Leu
1195            1200            1205            1210

agt gtt tca ctg agt tcc ggc aga gaa gaa gct aaa gat tca aaa caa     3760
Ser Val Ser Leu Ser Ser Gly Arg Glu Glu Ala Lys Asp Ser Lys Gln
1211            1216            1221            1226

aat gga gga ctg att cca gtt cat tct tta aat ctt ttg ctg aag agt     3808
Asn Gly Gly Leu Ile Pro Val His Ser Leu Asn Leu Leu Leu Lys Ser
1227            1232            1237            1242

att ggt gcc aca ctg aca gat gta caa gat gta gtt ttt aag ctt gca     3856
Ile Gly Ala Thr Leu Thr Asp Val Gln Asp Val Val Phe Lys Leu Ala
1243            1248            1253            1258

ttt ttt gaa ctc aac tat cag ttc cat aca aca tcc gat cta cag tct     3904
Phe Phe Glu Leu Asn Tyr Gln Phe His Thr Thr Ser Asp Leu Gln Ser
1259            1264            1269            1274

gaa gtc ata aga cac tat tca aaa cag gcc att aag cag atg tat gta     3952
Glu Val Ile Arg His Tyr Ser Lys Gln Ala Ile Lys Gln Met Tyr Val
1275            1280            1285            1290

ctc att ctt gga ctt gat gtt ttg gga aat cca ttt ggc tta att aga     4000
Leu Ile Leu Gly Leu Asp Val Leu Gly Asn Pro Phe Gly Leu Ile Arg
1291            1296            1301            1306

gaa ttt tct gaa ggt gta gaa gca ttt ttt tat gaa cct tac cag gga     4048
Glu Phe Ser Glu Gly Val Glu Ala Phe Phe Tyr Glu Pro Tyr Gln Gly
1307            1312            1317            1322

gcc atc cag ggt cct gaa gag ttt gtg gaa gga atg gca cta gga ctt     4096
Ala Ile Gln Gly Pro Glu Glu Phe Val Glu Gly Met Ala Leu Gly Leu  |
1323            1328            1333            1338            /

aag gca cta gtt ggt gga gct gtt ggt gga ttg gct ggt gct gcc tcc     4144
Lys Ala Leu Val Gly Gly Ala Val Gly Gly Leu Ala Gly Ala Ala Ser
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aaa atc acc ggt gct atg gct aag ggg gta gca gct atg acc atg gat   ·   4192
Lys Ile Thr Gly Ala Met Ala Lys Gly Val Ala Ala Met Thr Met Asp
1355                1360                1365                1370

gaa gac tac caa cag aag aga aga gaa gcc atg aat aag caa cca gct       4240
Glu Asp Tyr Gln Gln Lys Arg Arg Glu Ala Met Asn Lys Gln Pro Ala
1371                1376                1381                1386

ggt ttt aga gaa ggc atc act cgt gga gga aaa ggc tta gtt tct gga       4288
Gly Phe Arg Glu Gly Ile Thr Arg Gly Gly Lys Gly Leu Val Ser Gly
1387                1392                1397                1402

ttt gtt agt ggc ata aca gga att gtt aca aaa cca atc aaa gga gct       4336
Phe Val Ser Gly Ile Thr Gly Ile Val Thr Lys Pro Ile Lys Gly Ala
1403                1408                1413                1418

caa aaa gga gga gca gct ggt ttc ttt aaa ggt gtt ggg aaa ggt tta       4384
Gln Lys Gly Gly Ala Ala Gly Phe Phe Lys Gly Val Gly Lys Gly Leu
1419                1424                1429                1434

gta gga gcg gta gca agg cca act gga ggc atc ata gac atg gct agc       4432
Val Gly Ala Val Ala Arg Pro Thr Gly Gly Ile Ile Asp Met Ala Ser
1435                1440                1445                1450

agt aca ttt cag ggg ata aaa aga gct aca gag act tct gaa gtg gag       4480
Ser Thr Phe Gln Gly Ile Lys Arg Ala Thr Glu Thr Ser Glu Val Glu
1451                1456                1461                1466

agt ctg cga cct cct cgg ttc ttc aat gaa gat gga gtt atc aga ccg       4528
Ser Leu Arg Pro Pro Arg Phe Phe Asn Glu Asp Gly Val Ile Arg Pro
1467                1472                1477                1482

tac agg ttg agg gat ggg act gga aat caa atg tta cag aaa att caa       4576
Tyr Arg Leu Arg Asp Gly Thr Gly Asn Gln Met Leu Gln Lys Ile Gln
1483                1488                1493                1498

ttc tac agg gag tgg att atg act cac agt agc agt agt gat gat gat       4624
Phe Tyr Arg Glu Trp Ile Met Thr His Ser Ser Ser Ser Asp Asp Asp
1499                1504                1509                1514

gat gat gat gat gat gat gat gag tca gat cta aac cat taa aattcat       4673
Asp Asp Asp Asp Asp Asp Asp Glu Ser Asp Leu Asn His  *
1515                1520                1525

atgttcttta ttttacttgg aatgtttcat taacatgttt tgtatgactt ataccataat    4733

gcccatatgt ccatttatag ggaggtaaaa cacattttct tttaaaatgt tttcctacac    4793

attttcataa agcaaaataa ttgtattatt taagcacaga aaaaaatgta tcttacatcc    4853

aaagtaggga gggcatccaa catattatag jatttgctttt atatatttta tagctttgta   4913

ttgcatagtt tgtctttaag agttcaagtt agacttaaat ataattttga tgttcactgg    4973

ttttatttta aattgccttc ttatttgtta gcaaaatgcc tttttttaat ggtctctgta    5033
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<210> 566
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<220>
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<400> 566

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cggccgtagc ggccggggct gcggtagcca ctttagattt gggcaaggac tttagattcg     120

ggctctgttc tgtttccgcc gtcctgcttc ctgccgaggc tggcccaggc agccgcgctt     180

cgaaggacgc cgccgggagc tgcggagcat gcgtggagtg gcagtgctaa cggctggtgt     240

ctcgcactgt tggcctgtga aggtacgtga agctgaaagc ctgga      atg gct gga     294
                                                        Met Ala Gly
                                                         1
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aag ggg tca tca ggc agg cgg ccc ctg ctg ctg ggg ctg ctg gtg gcc     342
Lys Gly Ser Ser Gly Arg Arg Pro Leu Leu Leu Gly Leu Leu Val Ala
 4               9              14                 19

gta gcc act gtc cac ctg gtc atc tgt ccc tac acc aaa gtg gag gag     390
Val Ala Thr Val His Leu Val Ile Cys Pro Tyr Thr Lys Val Glu Glu
 20              25             30                 35

agc ttc aac ctg cag gcc aca cat gac ctg ctc tac cac tgg caa gac     438
Ser Phe Asn Leu Gln Ala Thr His Asp Leu Leu Tyr His Trp Gln Asp
 36              41             46                 51

ctg gag cag tac gac cat ctt gag ttc ccc gga gtc gtc ccc agg acg     486
Leu Glu Gln Tyr Asp His Leu Glu Phe Pro Gly Val Val Pro Arg Thr
 52              57             62                 67

ttc ctc ggg cca gtg gtg atc gca gtg ttc tcc agc ccc gcg gtt tac     534
Phe Leu Gly Pro Val Val Ile Ala Val Phe Ser Ser Pro Ala Val Tyr
 68              73             78                 83

gtg ctt tcg ctg tta gaa atg tcc aag ttt tac tct cag cta ata gtt     582
Val Leu Ser Leu Leu Glu Met Ser Lys Phe Tyr Ser Gln Leu Ile Val
 84              89             94                 99
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aga gga gtg ctt gga ctc ggc gtg att ttt gga ctc tgg acg tta caa        630
Arg Gly Val Leu Gly Leu Gly Val Ile Phe Gly Leu Trp Thr Leu Gln
100             105             110             115

aag gaa gtg aga cgg cac ttc ggg gcc atg gtg gcc acc atg ttc tgc        678
Lys Glu Val Arg Arg His Phe Gly Ala Met Val Ala Thr Met Phe Cys
116             121             126             131

tgg gtg acg gcc atg cag ttc cac ctg atg ttc tac tgc acg cgg aca        726
Trp Val Thr Ala Met Gln Phe His Leu Met Phe Tyr Cys Thr Arg Thr
132             137             142             147

ctg ccc aat gtg ctg gcc ctg cct gta gtc ctg ctg gcc ctc gcg gcc        774
Leu Pro Asn Val Leu Ala Leu Pro Val Val Leu Leu Ala Leu Ala Ala
148             153             158             163

tgg ctg cgg cac gag tgg gcc cgc ttc atc tgg ctg tca gcc ttc gcc        822
Trp Leu Arg His Glu Trp Ala Arg Phe Ile Trp Leu Ser Ala Phe Ala
164             169             174             179

atc atc gtg ttc agg gtg gag ctg tgc ctg ttc ctg ggc ctc ctg ctg        870
Ile Ile Val Phe Arg Val Glu Leu Cys Leu Phe Leu Gly Leu Leu Leu
180             185             190             195

ctg ctg gcc ttg ggc aac cga aag gtt tct gta gtc aga gcc ctt cgc        918
Leu Leu Ala Leu Gly Asn Arg Lys Val Ser Val Val Arg Ala Leu Arg
196             201             206             211

cac gcc gtc ccg gca ggg atc ctc tgt tta gga ctg acg gtt gct gtg        966
His Ala Val Pro Ala Gly Ile Leu Cys Leu Gly Leu Thr Val Ala Val
212             217             222             227

gac tct tat ttt tgg cgg cag ctc act tgg ccg gaa gga aag gtg ctt        1014
Asp Ser Tyr Phe Trp Arg Gln Leu Thr Trp Pro Glu Gly Lys Val Leu
228             233             238             243

tgg tac aac act gtc ctg aac aaa agc tcc aac tgg ggg acc tcc ccg        1062
Trp Tyr Asn Thr Val Leu Asn Lys Ser Ser Asn Trp Gly Thr Ser Pro
244             249             254             259

ctg ctg tgg tac ttc tac tca gcc ctg ccc cgc ggc ctg ggc tgc agc        1110
Leu Leu Trp Tyr Phe Tyr Ser Ala Leu Pro Arg Gly Leu Gly Cys Ser
260             265             270             275

ctg ctc ttc atc ccc ctg ggc ttg gta gac aga agg acg cac gcg ccg        1158
Leu Leu Phe Ile Pro Leu Gly Leu Val Asp Arg Arg Thr His Ala Pro
276             281             286             291

acg gtg ctg gca ctg ggc ttc atg gca ctc tac tcc ctc ctg cca cac        1206
Thr Val Leu Ala Leu Gly Phe Met Ala Leu Tyr Ser Leu Leu Pro His
292             297             302             307

aag gag cta cgc ttc atc atc tat gcc ttc ccc atg ctc aac atc acg        1254
Lys Glu Leu Arg Phe Ile Ile Tyr Ala Phe Pro Met Leu Asn Ile Thr
308             313             318             323

gct gcc aga ggc tgc tcc tac ctg ctg aat aac tat aaa aag tct tgg        1302
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1881

```
Ala Ala Arg Gly Cys Ser Tyr Leu Leu Asn Asn Tyr Lys Lys Ser Trp
324             329             334             339

ctg tac aaa gcg ggg tct ctg ctt gtg atc gga cac ctc gtg gtg aat    1350
Leu Tyr Lys Ala Gly Ser Leu Leu Val Ile Gly His Leu Val Val Asn
340             345             350             355

gcc gcc tac tca gcc acg gcc ctg tat gtg tcc cat ttc aac tac cca    1398
Ala Ala Tyr Ser Ala Thr Ala Leu Tyr Val Ser His Phe Asn Tyr Pro
356             361             366             371

ggt ggc gtc gca atg cag agg ctg cac cag ctg gtg ccc ccc cag aca    1446
Gly Gly Val Ala Met Gln Arg Leu His Gln Leu Val Pro Pro Gln Thr
372             377             382             387

gac gtc ctt ctg cac att gac gtg gca gcc gcc cag aca ggt gtg tct    1494
Asp Val Leu Leu His Ile Asp Val Ala Ala Ala Gln Thr Gly Val Ser
388             393             398             403

cgg ttt ctc caa gtc aac agc gcc tgg agg tac gac aag agg gag gat    1542
Arg Phe Leu Gln Val Asn Ser Ala Trp Arg Tyr Asp Lys Arg Glu Asp
404             409             414             419

gtg cag ccg ggg aca ggc atg ctg gca tac aca cac atc ctc atg gag    1590
Val Gln Pro Gly Thr Gly Met Leu Ala Tyr Thr His Ile Leu Met Glu
420             425             430             435

gcg gcc cct ggg ctc ctg gcc ctc tac agg gac aca cac cgg gtc ctg    1638
Ala Ala Pro Gly Leu Leu Ala Leu Tyr Arg Asp Thr His Arg Val Leu
436             441             446             451

gcc agc gtc gtg ggg acc aca ggt gtg agt ctg aac ctg acc caa ctg    1686
Ala Ser Val Val Gly Thr Thr Gly Val Ser Leu Asn Leu Thr Gln Leu
452             457             462             467

ccc ccc ttc aac gtc cac ctg cag aca aag ctg gtg ctt ctg gag agg    1734
Pro Pro Phe Asn Val His Leu Gln Thr Lys Leu Val Leu Leu Glu Arg
468             473             478             483

ctc ccc cgg ccg tcc tga ggggga ccaggcagcc ctcagcagcc acaggccttc    1788
Leu Pro Arg Pro Ser *
484                  489

caggagctgt tatcactacc agtttctggc acaattccag cacaattatg acaattcaga    1848

gaagcaagtc aaaggactgg gcacctgcct ctgacagaca ccagaccagg tccagggcct    1908

cctccacagc ctcagctggg gctctcagca ccaaagaacg aggggcccag gtcttgttgg    1968

caccccggga gccactgccc agggtgatgg tggccagctc agggcttcct gcgggtgact    2028

gtcgcccaga ccaggtgcca ttcatgacta atcaggagca gcgggctcac ccaggcacct    2088

gtctgccagg aggccacgtg tgtcctgccc acccaggggg agctgtattt tggcagcacc    2148

ccacgcttgc tgcccgaggg cctcttgggg cacctaagac agcaccccct ctcaggggag    2208
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1882

accatggtgg ccccggccgc accccccac cctggtgcca ccactgcaac ttttgtattc   2268

acaggcatcc catctccatc acagataaaa tcttaggaga taaacacatt caaaaaggaa   2328

tgagataaaa agaataaggc aataaatgtt gattggaacc tctcaagatt acagaaaata   2388

atgagaatga aattttaaaa aaaaaaaa   2416

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Met Pro Tyr Ser Leu Asn Leu Ala Ile Arg Asp Thr Phe Val Asn Ala
 1               5                   10

tct cgg acc ctg tac agc agc agc ccc aga gtc cta agc aac aac agt      96
Ser Arg Thr Leu Tyr Ser Ser Ser Pro Arg Val Leu Ser Asn Asn Ser
 17                  22                  27                  32

gac gcc aac ttg gag ctc atc aac acc tgg gtg gcc aag aac acc aac     144
Asp Ala Asn Leu Glu Leu Ile Asn Thr Trp Val Ala Lys Asn Thr Asn
 33                  38                  43                  48

aac aag atc agc cgg ctg cta gac agt ctg ccc tcc gat acc cgc ctt     192
Asn Lys Ile Ser Arg Leu Leu Asp Ser Leu Pro Ser Asp Thr Arg Leu
 49                  54                  59                  64

gtc ctc ctc aat gct atc tac ctg agt gcc aag tgg aag aca aca ttt     240
Val Leu Leu Asn Ala Ile Tyr Leu Ser Ala Lys Trp Lys Thr Thr Phe
 65                  70                  75                  80

gat ccc aag aaa acc aga atg gaa ccc ttt cac ttc aaa aac tca gtt     288
Asp Pro Lys Lys Thr Arg Met Glu Pro Phe His Phe Lys Asn Ser Val
 81                  86                  91                  96

ata aaa gtg ccc atg atg aat agc aag aag tac cct gtg gcc cat ttc     336
Ile Lys Val Pro Met Met Asn Ser Lys Lys Tyr Pro Val Ala His Phe
 97                  102                 107                 112

att gac caa act ttg aaa gcc aag ttg agt cgt ggg gac agc ttg aag     384
Ile Asp Gln Thr Leu Lys Ala Lys Leu Ser Arg Gly Asp Ser Leu Lys
113                 118                 123                 128

gag cca acc tca att gca gag agc agc cgt cac ccc agc tac cgc tca     432
Glu Pro Thr Ser Ile Ala Glu Ser Ser Arg His Pro Ser Tyr Arg Ser
129                 134                 139                 144
```

1883

```
gag ccc agc ttg gaa cca gag agc ttc cgt tct cct acc ttt ggc aaa          480
Glu Pro Ser Leu Glu Pro Glu Ser Phe Arg Ser Pro Thr Phe Gly Lys
145                 150                 155                 160

agt ttt cac ttc gat cca cta tcc agt ggc tca cgc tcc tcc agc ctc          528
Ser Phe His Phe Asp Pro Leu Ser Ser Gly Ser Arg Ser Ser Ser Leu
161                 166                 171                 176

aag tca gcc cag ggc aca ggc ttt gag ctg ggc cag ttg caa tcc att          576
Lys Ser Ala Gln Gly Thr Gly Phe Glu Leu Gly Gln Leu Gln Ser Ile
177                 182                 187                 192

cgt tca gag ggc acc acc tcc acc tcc tat aag agc ctg gcc aac cag          624
Arg Ser Glu Gly Thr Thr Ser Thr Ser Tyr Lys Ser Leu Ala Asn Gln
193                 198                 203                 208

aca cgc aat gga agc cta tct tat gac agc ttg ctc aca cct tca gac          672
Thr Arg Asn Gly Ser Leu Ser Tyr Asp Ser Leu Leu Thr Pro Ser Asp
209                 214                 219                 224

agc cct gat ttt gag tca gtg cag gca ggg cct gag cca gac cca cct          720
Ser Pro Asp Phe Glu Ser Val Gln Ala Gly Pro Glu Pro Asp Pro Pro
225                 230                 235                 240

tta ggc tat acc tct ccc ttc ctg tca gcc agg ctg gcc cag caa cgg          768
Leu Gly Tyr Thr Ser Pro Phe Leu Ser Ala Arg Leu Ala Gln Gln Arg
241                 246                 251                 256

gaa gct gag agg cac cca cgt ttg gtg cca act ggc cca aca cac cga          816
Glu Ala Glu Arg His Pro Arg Leu Val Pro Thr Gly Pro Thr His Arg
257                 262                 267                 272

gag ccc tca cca gtc cgt tac gac aat ctg tcg cgc cac att gtg gcc          864
Glu Pro Ser Pro Val Arg Tyr Asp Asn Leu Ser Arg His Ile Val Ala
273                 278                 283                 288

tct ctc cag gaa cga gag aag ttg ctg cgc cag tca ccc cca ctc ccg          912
Ser Leu Gln Glu Arg Glu Lys Leu Leu Arg Gln Ser Pro Pro Leu Pro
289                 294                 299                 304

ggc cgt gag gaa gaa cca ggc ttg ggg gac tca ggc att cag tca aca          960
Gly Arg Glu Glu Glu Pro Gly Leu Gly Asp Ser Gly Ile Gln Ser Thr
305                 310                 315                 320

cca ggc tcg ggc cat gcc cct cgt act agt tcc tcc tca gat gat tca         1008
Pro Gly Ser Gly His Ala Pro Arg Thr Ser Ser Ser Ser Asp Asp Ser
321                 326                 331                 336

aag aga tca cct ttg ggc aag act cca ctg gga cgc cca gct gtc ccc         1056
Lys Arg Ser Pro Leu Gly Lys Thr Pro Leu Gly Arg Pro Ala Val Pro
337                 342                 347                 352

cgt ttt ggc aag cca gat ggg cta agg ggc cgg gga gta ggg tcc cct         1104
Arg Phe Gly Lys Pro Asp Gly Leu Arg Gly Arg Gly Val Gly Ser Pro
353                 358                 363                 368

gaa cca ggc cca aca gcc cca tac ctg ggc cga tcg atg tct tac agc         1152
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      Glu Pro Gly Pro Thr Ala Pro Tyr Leu Gly Arg Ser Met Ser Tyr Ser
      369                 374             379                 384

      agc caa aaa gcc caa cct ggt gtc tct gag aca gaa gaa gtg gcc ttg    1200
      Ser Gln Lys Ala Gln Pro Gly Val Ser Glu Thr Glu Glu Val Ala Leu
      385                 390             395                 400

      cag cca tta ctg aca ccc aaa gat gaa gta cag ctg aag acc acc tac    1248
      Gln Pro Leu Leu Thr Pro Lys Asp Glu Val Gln Leu Lys Thr Thr Tyr
      401                 406             411                 416

      agc aaa tcc aac ggg cag ccc aag agc tta ggc tca gcc tcc cct ggc    1296
      Ser Lys Ser Asn Gly Gln Pro Lys Ser Leu Gly Ser Ala Ser Pro Gly
      417                 422             427                 432

      cca ggc cag cca cct ctc agt agc ccc acg agg gga gga gtc aag aag    1344
      Pro Gly Gln Pro Pro Leu Ser Ser Pro Thr Arg Gly Gly Val Lys Lys
      433                 438             443                 448

      gtg tca ggg gtt ggt ggt acc acc tat gag att tcg gtg tga gccttcg    1393
      Val Ser Gly Val Gly Gly Thr Thr Tyr Glu Ile Ser Val  *
      449                 454             459

      gcacctcccc tccccaacgc ctctgcgcct acaccaaagg ccccaggtg gccaccttcc    1453

      ttccctcaag gggctcccct cccgtgcatg dacatttttt aaaccaccga ttccaagagg    1513

      atgaggagtg ttttctaaaa tgcagtaggc ttggggagtc ggagagttgg ggccctgaga    1573

      ctggggtagc aacccccct tttatctttt aagaccttcc cttccttgat ccctggacca    1633

      gactcagtgg acatttgtgc aattgctcgc cctggaggga accagatcat ttttaaacca    1693

      gaaataattt ttttattat tgttacggat tctatttttt tcctcttctg cgttaccagg    1753

      tgtgtgtgta catataatat atatatatat atatattata aatatcaaag aaattatata    1813

      tctatcctgg gatgggaaaa tgagggaggg atacatatac ggaggggggat cttactcttc    1873

      ccattcctca gaccagcagg aaaagagggg agacgtcagt cttttcctg tggttccctc    1933

      tcatttgtcc cagttactaa ctacggaaat agcatcctct gctggtgcta agtgtgatta    1993

      ggaagaagcc tggggagagg cgagtctgga attttggtca caagagggaa ggacttggag    2053

      aggagaatta gtttctagg ctcattggca tttagtttcc ctaggaaagg ggtcaaaact    2113

      tcaagacact ggtggtggtg ggagatcagg aaaataactt ggcctagctc aaacaatatt    2173

      ggataatccc ctccttgggg gagagggatt agagtgtgct cctactggcc ccttggagcc    2233

      tcccctagct tacacagtta acttgatttt aaaatccaag gccaggagag aagaatccaa    2293

      aaagcaatat ttttcatcac atgccaaaaa cggggggatag agagaaggag tggcaggcct    2353

      aggcccctcc gattgtccct tgggggttac ccctcagccc acctcactat ggtgctgggt    2413
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1885

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agagggggata cctgggttct aacctctaaa tagggggagat cccagcctcc acaaagaggc    2473

cctttattt tttattctga ttagccattt taaaccaacg aggaataaaa agaaatcctg    2533

atctaaaaaa aaaaaa                                                     2549
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cgacccacgc gtccgcgttt agctcaattt aagccaagtt cccaaatttt aagaaaagta     60

tcggatagtg gctggttaaa acagaaaaac atcaaacaag ccatcaaatc tctgaaaaaa    120

tatagtgaca aatcagcaga aaagagtcct tttccagaag agaaaagtca cattatagac    180

aaagaagaag atataggtaa acgcagtctt tttcattaca caagttctat aaccacaaaa    240

tttggagact cattctactt tttatcaaat catattaatt catatttcaa acgtaaggaa    300

aaa atg tct caa caa aag gaa aat gaa cat ttc cgg gac aaa tca gaa     348
    Met Ser Gln Gln Lys Glu Asn Glu His Phe Arg Asp Lys Ser Glu
     1               5                  10

ctt gaa gat aaa aag gta gaa gag ggg aaa tta aga tct cca gat cct     396
Leu Glu Asp Lys Lys Val Glu Glu Gly Lys Leu Arg Ser Pro Asp Pro
 16              21                  26                      31

ggc atc ctg gct tat aag cca ggc tca gaa tct gta cat acg gtg gac     444
Gly Ile Leu Ala Tyr Lys Pro Gly Ser Glu Ser Val His Thr Val Asp
 32              37                  42                      47

aag cct aca agt cct tct gcg ata cct gat gtt ctt caa gtt tca act     492
Lys Pro Thr Ser Pro Ser Ala Ile Pro Asp Val Leu Gln Val Ser Thr
 48              53                  58                      63

aaa caa agt att gct aac ttt ctt tct cgt ccc acg gaa ggt gta caa     540
Lys Gln Ser Ile Ala Asn Phe Leu Ser Arg Pro Thr Glu Gly Val Gln
 64              69                  74                      79

gct tta gta ggt ggt tat att ggt gga ctt gtc ccc aaa tta aag tat     588
Ala Leu Val Gly Gly Tyr Ile Gly Gly Leu Val Pro Lys Leu Lys Tyr
 80              85                  90                      95

gat tca aag agt cag tca gaa gaa cag gaa gag cct gct aaa act gat     636
Asp Ser Lys Ser Gln Ser Glu Glu Gln Glu Glu Pro Ala Lys Thr Asp
 96              101                 106                     111
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```
cag gct gtc agc aaa gac aga aat gca gag gag aaa aag cgt tta tct      684
Gln Ala Val Ser Lys Asp Arg Asn Ala Glu Glu Lys Lys Arg Leu Ser
112             117             122             127

ctt cag cga gaa aag att atc gca agg gtg agt att gat aac agg acc      732
Leu Gln Arg Glu Lys Ile Ile Ala Arg Val Ser Ile Asp Asn Arg Thr
128             133             138             143

cgg gca tta gtt cag gca tta aga aga aca act gac cca aag ctc tgc      780
Arg Ala Leu Val Gln Ala Leu Arg Arg Thr Thr Asp Pro Lys Leu Cys
144             149             154             159

att act agg gtt gaa gaa ctg act ttt cat ctt cta gaa ttt cct gaa      828
Ile Thr Arg Val Glu Glu Leu Thr Phe His Leu Leu Glu Phe Pro Glu
160             165             170             175

gga aaa gga gtg gct gtc aag gaa aga att att cca tat tta tta cga      876
Gly Lys Gly Val Ala Val Lys Glu Arg Ile Ile Pro Tyr Leu Leu Arg
176             181             186             191

ctg aga caa att aag gat gaa act ctt cag gct gca gtt aga gaa att      924
Leu Arg Gln Ile Lys Asp Glu Thr Leu Gln Ala Ala Val Arg Glu Ile
192             197             202             207

ttg gcc cta att ggc tat gtg gat cca gtg aaa ggg aga gga atc cga      972
Leu Ala Leu Ile Gly Tyr Val Asp Pro Val Lys Gly Arg Gly Ile Arg
208             213             218             223

att ctc tca att gat ggt gga gga aca agg ggc gtg gtt gct ctc cag     1020
Ile Leu Ser Ile Asp Gly Gly Gly Thr Arg Gly Val Val Ala Leu Gln
224             229             234             239

acc cta cga aaa tta gtt gaa ctt act cag aag cca gtt cat cag ctc     1068
Thr Leu Arg Lys Leu Val Glu Leu Thr Gln Lys Pro Val His Gln Leu
240             245             250             255

ttt gat tac att tgt ggt gta agc aca ggt gcc ata tta gct ttc atg     1116
Phe Asp Tyr Ile Cys Gly Val Ser Thr Gly Ala Ile Leu Ala Phe Met
256             261             266             271

ttg ggg ttg ttt cat atg ccc ttg gat gaa tgt gag gaa ctt tat cga     1164
Leu Gly Leu Phe His Met Pro Leu Asp Glu Cys Glu Glu Leu Tyr Arg
272             277             282             287

aaa tta gga tca gat gta ttt tca caa aat gtc att gtt gga aca gta     1212
Lys Leu Gly Ser Asp Val Phe Ser Gln Asn Val Ile Val Gly Thr Val
288             293             298             303

aaa atg agt tgg agc cat gca ttt tat gac agt caa aca tgg gaa aac     1260
Lys Met Ser Trp Ser His Ala Phe Tyr Asp Ser Gln Thr Trp Glu Asn
304             309             314             319

att ctt aag gat agg atg gga tct gca ctg atg att gaa aca gca aga     1308
Ile Leu Lys Asp Arg Met Gly Ser Ala Leu Met Ile Glu Thr Ala Arg
320             325             330             335

aac ccc aca tgt cct aag gta gct gct gta agt acc ata gta aat aga     1356
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1887

```
Asn Pro Thr Cys Pro Lys Val Ala Ala Val Ser Thr Ile Val Asn Arg
336             341             346             351

ggg ata aca ccc aaa gct ttt gtg ttc aga aac tat ggt cat ttt cct     1404
Gly Ile Thr Pro Lys Ala Phe Val Phe Arg Asn Tyr Gly His Phe Pro
352             357             362             367

gga atc aac tct cat tat ttg gga ggc tgt cag tat aaa atg tgg cag     1452
Gly Ile Asn Ser His Tyr Leu Gly Gly Cys Gln Tyr Lys Met Trp Gln
368             373             378             383

gcc att aga gcc tca tct gct gct cca ggc tac ttt gca gaa tat gca     1500
Ala Ile Arg Ala Ser Ser Ala Ala Pro Gly Tyr Phe Ala Glu Tyr Ala
384             389             394             399

ttg gga aat gat ctt cat caa gat gga ggt ttg ctt ctg aat aac cct     1548
Leu Gly Asn Asp Leu His Gln Asp Gly Gly Leu Leu Leu Asn Asn Pro
400             405             410             415

tcg gca tta gct atg cat gag tgt aaa tgt ctt tgg cca gat gtg ccg     1596
Ser Ala Leu Ala Met His Glu Cys Lys Cys Leu Trp Pro Asp Val Pro
416             421             426             431

tta gag tgc ata gta tcc ctg ggc act gga cgt tat gag agt gat gtg     1644
Leu Glu Cys Ile Val Ser Leu Gly Thr Gly Arg Tyr Glu Ser Asp Val
432             437             442             447

aga aac acg gta aca tac aca agc ttg aaa act aaa ctt tct aat gtt     1692
Arg Asn Thr Val Thr Tyr Thr Ser Leu Lys Thr Lys Leu Ser Asn Val
448             453             458             463

atc aac agt gct aca gat aca gaa gaa gtc cat ata atg ctt gat ggc     1740
Ile Asn Ser Ala Thr Asp Thr Glu Glu Val His Ile Met Leu Asp Gly
464             469             474             479

ctg tta cct cct gac acc tat ttt aga ttc aat cct gta atg tgt gaa     1788
Leu Leu Pro Pro Asp Thr Tyr Phe Arg Phe Asn Pro Val Met Cys Glu
480             485             490             495

aac ata cct cta gat gaa agt cga aat gaa aag ctg gat cag ctg cag     1836
Asn Ile Pro Leu Asp Glu Ser Arg Asn Glu Lys Leu Asp Gln Leu Gln
496             501             506             511

ttg gaa ggg ttg aaa tac ata gaa aga aat gaa caa aaa atg aaa aaa     1884
Leu Glu Gly Leu Lys Tyr Ile Glu Arg Asn Glu Gln Lys Met Lys Lys
512             517             522             527

gtt gca aaa ata tta agt caa gaa aaa aca act ctg cag aaa att aat     1932
Val Ala Lys Ile Leu Ser Gln Glu Lys Thr Thr Leu Gln Lys Ile Asn
528             533             538             543

gat tgg ata aaa tta aaa act gat atg tat gaa gga ctt cca ttc ttt     1980
Asp Trp Ile Lys Leu Lys Thr Asp Met Tyr Glu Gly Leu Pro Phe Phe    |
544             549             554             559
                                                                    /

tca aaa ttg tga tga gtatatgctt atgttctcat aaatgaaggt ctgtttagaa    2035
Ser Lys Leu  *
```

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gatcaaccac attcaataag gaattgtggg gttcgacatg agttaacttt gaaatacgta      2095

tgaattctgg agaatcctga aaaagacggt gcttcaacca gcttgcatag cacagagaat      2155

attcttggtt acagaattca tatgggaact aggcttttaa gatgttaata attagctaag      2215

ctttagtaac ccttactgtg ctagtagatt ttagtagata ttggtgttat attgtttgat      2275

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gccgccttcc cgcgccccgc agcgccccgc agagcagtcg ag      atg ggt gag tca         114
                                                    Met Gly Glu Ser
                                                    1

agt gaa gac ata gac caa atg ttc agc act ttg ctg gga gag atg gat            162
Ser Glu Asp Ile Asp Gln Met Phe Ser Thr Leu Leu Gly Glu Met Asp
 5               10               15               20

ctt ctg act cag agt tta gga gtt gac act ctc cct cct cct gac cct            210
Leu Leu Thr Gln Ser Leu Gly Val Asp Thr Leu Pro Pro Pro Asp Pro
 21               26               31               36

aat cca ccc aga gct gaa ttt aac tac agt gtg ggg ttt aaa gat tta            258
Asn Pro Pro Arg Ala Glu Phe Asn Tyr Ser Val Gly Phe Lys Asp Leu
 37               42               47               52

aat gag tcc tta aat gca ctg gaa gac caa gat tta gat gct ctc atg            306
Asn Glu Ser Leu Asn Ala Leu Glu Asp Gln Asp Leu Asp Ala Leu Met
 53               58               63               68

gca gat ctg gta gca gac ata agt gag gct gag cag agg aca atc cag            354
Ala Asp Leu Val Ala Asp Ile Ser Glu Ala Glu Gln Arg Thr Ile Gln
 69               74               79               84

gca cag aaa gag tcc ttg cag aat caa cat cat tca gca tct cta caa            402
Ala Gln Lys Glu Ser Leu Gln Asn Gln His His Ser Ala Ser Leu Gln
 85               90               95               100

gca tca att ttc agt ggt gca gcc tct ctt ggt tat gga aca aat gtt            450
Ala Ser Ile Phe Ser Gly Ala Ala Ser Leu Gly Tyr Gly Thr Asn Val
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```
gct gcc act ggt atc agc caa tat gag gat gac tta cca cct cca cca    498
Ala Ala Thr Gly Ile Ser Gln Tyr Glu Asp Asp Leu Pro Pro Pro Pro
117                 122                 127                 132

gcc gat cct gtg tta gac ctt cca ctg cca cca cca cct cct gaa cct    546
Ala Asp Pro Val Leu Asp Leu Pro Leu Pro Pro Pro Pro Pro Glu Pro
133                 138                 143                 148

ctc tct cag gaa gag gaa gaa gcc caa gcc aag gct gat aaa att aag    594
Leu Ser Gln Glu Glu Glu Glu Ala Gln Ala Lys Ala Asp Lys Ile Lys
149                 154                 159                 164

ctg gcg ctg gaa aaa ctg aag gag gcc aag gtt aag aag ctc gtc gtc    642
Leu Ala Leu Glu Lys Leu Lys Glu Ala Lys Val Lys Lys Leu Val Val
165                 170                 175                 180

aag gtg cac atg aat gat aac agc aca aag tca ctg atg gtg gat gag    690
Lys Val His Met Asn Asp Asn Ser Thr Lys Ser Leu Met Val Asp Glu
181                 186                 191                 196

cgg cag ctg gcc cga gat gtt ctg gac aac ctt ttc gag aaa act cat    738
Arg Gln Leu Ala Arg Asp Val Leu Asp Asn Leu Phe Glu Lys Thr His
197                 202                 207                 212

tgt gac tgc aat gta gac tgg tgt ctt tat gaa atc tac ccg gaa cta    786
Cys Asp Cys Asn Val Asp Trp Cys Leu Tyr Glu Ile Tyr Pro Glu Leu
213                 218                 223                 228

caa att gag agg ttt ttt gaa gac cat gaa aat gtt gtt gaa gtc tta    834
Gln Ile Glu Arg Phe Phe Glu Asp His Glu Asn Val Val Glu Val Leu
229                 234                 239                 244

tca gac tgg aca aga gac aca gaa aat aaa ata cta ttt ttg gag aaa    882
Ser Asp Trp Thr Arg Asp Thr Glu Asn Lys Ile Leu Phe Leu Glu Lys
245                 250                 255                 260

gag gag aaa tat gct gta ttt aaa aac ccc cag aat ttc tac ttg gat    930
Glu Glu Lys Tyr Ala Val Phe Lys Asn Pro Gln Asn Phe Tyr Leu Asp
261                 266                 271                 276

aac aga gga aaa aaa gaa agc aag gaa act aat gag aaa atg aat gct    978
Asn Arg Gly Lys Lys Glu Ser Lys Glu Thr Asn Glu Lys Met Asn Ala
277                 282                 287                 292

aag aac aag gaa tcc tta ctt gag gta agg tta att ttg cag agt gga    1026
Lys Asn Lys Glu Ser Leu Leu Glu Val Arg Leu Ile Leu Gln Ser Gly
293                 298                 303                 308

aga aaa gag aag gac gtt tgc tct att ttt aag tca ttt gct tcc gag    1074
Arg Lys Glu Lys Asp Val Cys Ser Ile Phe Lys Ser Phe Ala Ser Glu
309                 314                 319                 324

aac aat gga aaa atc taa agacat acactgaaat tttaagttgg ggtgttaaaa    1128
Asn Asn Gly Lys Ile  *
325                 330
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tcaaattatt tctaaattat agctatttag ataattcaac tgttttttctt ttttgagtca   1188

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cagcggctgc tggagccgcg acagtacatg ctgctgctgc ccgagcacgt gctggtcaag   120

atcttcagct tcctgcccac gcgcgcgctg ccgccctca agtgcacctg ccaccacttc   180

aagggcatca tcgaggcgtt tggcgtgcgg gccacagact cgcgctggag ccgagacccg   240

ctctaccgcg   atg atc cgt gca aac agt gcc gca aga gat acg aga agg   289
              Met Ile Arg Ala Asn Ser Ala Ala Arg Asp Thr Arg Arg
               1   5   10

gcg acg tgt cgc tct gcc gct ggc acc cca agc cct acc acc atg acc   337
Ala Thr Cys Arg Ser Ala Ala Gly Thr Pro Ser Pro Thr Thr Met Thr
 14   19   24   29

tgc ctt acg gac gtt cct act gga tgt gct gcc gtc gag ccg acc gcg   385
Cys Leu Thr Asp Val Pro Thr Gly Cys Ala Ala Val Glu Pro Thr Ala
 30   35   40   45

aga ctc ccg gct gcc gcc tgg gcc tcc acg ata aca act ggg tgc tgc   433
Arg Leu Pro Ala Ala Ala Trp Ala Ser Thr Ile Thr Thr Gly Cys Cys
 46   51   56   61

cct gca atg ggc cag gcg ggg gcc ggg ccg gcc ggg agg aag gga agt   481
Pro Ala Met Gly Gln Ala Gly Ala Gly Pro Ala Gly Arg Lys Gly Ser
 62   67   72   77

gaa gcc ggg gga ggg ccg ggg aga gcc cac cac gcc cac ccc tcc cct   529
Glu Ala Gly Gly Gly Pro Gly Arg Ala His His Ala His Pro Ser Pro
 78   83   88   93

ctc ccc cgg gag ccg agg gtc cgg act ggg ccg cct gcc cat tcc cct   577
Leu Pro Arg Glu Pro Arg Val Arg Thr Gly Pro Pro Ala His Ser Pro
 94   99   104   109

act cca ggc agc att gat ccc tca ccg gaa ctg agc tgg ggt tca gca   625

1891

```
Thr Pro Gly Ser Ile Asp Pro Ser Pro Glu Leu Ser Trp Gly Ser Ala
110              115              120              125

ggg gtg acc cag gaa agc cct ctg ctt gat cct gtt gat ttt cta ctc      673
Gly Val Thr Gln Glu Ser Pro Leu Leu Asp Pro Val Asp Phe Leu Leu
126              131              136              141

ttc aga acc agg gcc gtg gac cct ctg aga agg gtg ttt ttt ttt ttt      721
Phe Arg Thr Arg Ala Val Asp Pro Leu Arg Arg Val Phe Phe Phe Phe
142              147              152              157

tat cag cat ctc act ttc ttc tcc att cag ccc caa ccc cct ccc tgc      769
Tyr Gln His Leu Thr Phe Phe Ser Ile Gln Pro Gln Pro Pro Pro Cys
158              163              168              173

cat gct ttc cac ccc aag gac cca cca gca ggg agc aga cgg cag cta      817
His Ala Phe His Pro Lys Asp Pro Pro Ala Gly Ser Arg Arg Gln Leu
174              179              184              189

att ttg gta cca ctt aag ggt ccc ccc att ctg gcc ccc atc ctc tcc      865
Ile Leu Val Pro Leu Lys Gly Pro Pro Ile Leu Ala Pro Ile Leu Ser
190              195              200              205

ctc acc cca att ctt tct cgc tgg agc tgt tat ttc cca aga agc cgc      913
Leu Thr Pro Ile Leu Ser Arg Trp Ser Cys Tyr Phe Pro Arg Ser Arg
206              211              216              221

atc gcc caa ggt tgg cac ctc tcc taa cctgc cacacgacag ctctcacctc      965
Ile Ala Gln Gly Trp His Leu Ser *
222              227

tctaggaatt gggggctgtc aggtcacagg tgggatctgg cattttttta tgacagtcca    1025

tttctagatg gtttgcctat taaagaagtg ggggggaaat actgttttct ccttaacctc    1085

aagctaccag tctctcctct tccgcgtaga ggaagagggg ggcagacaaa aaaaaagctg    1145

aagtataaaa accctcctcc tcccgttatt atttaagcta ctgccatcaa ccccaccccc    1205

ataaagctgt gaagcccttt gcctcgcttt tgacagcgtg ggggggcccc gtgggcaggg    1265

acttcggatt tgcatttctg ggttgttttt ccttccactc tggggtctcg ttcaggcatt    1325

ggggtctcct caccccagcc acatgtttct ttaagaatcc tttggtcaac caggaccttg    1385

atttttcagg cattttggtc tggggtattt ttgtttgttc tctctgtttt ttgttttctt    1445

ttttttcttt ccatcgtggt tctggaagct tctagcgtgt ggcatctgac caattttgaa    1505

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<213> Homo sapiens

<220>
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<222> (1)..(1650)

<400> 571

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Met Glu Phe Ala Glu Leu Ile Lys Thr Pro Arg Val Asp Asn Val Val
 1               5                  10

ctg cac cgg cct ttc tac ccg gct gtc gag ggc acc ctg tgc ctg acg      96
Leu His Arg Pro Phe Tyr Pro Ala Val Glu Gly Thr Leu Cys Leu Thr
 17                  22                 27                 32

ggc cac cac ttg atc ctg tcc tcc cgg cag gac aat acg gag gag ctg     144
Gly His His Leu Ile Leu Ser Ser Arg Gln Asp Asn Thr Glu Glu Leu
 33                  38                 43                 48

tgg ctc ctc cat tca aac atc gac gcc atc gac aag cga ttt gta gga     192
Trp Leu Leu His Ser Asn Ile Asp Ala Ile Asp Lys Arg Phe Val Gly
 49                  54                 59                 64

tca ctg ggt acc atc atc ata aaa tgt aaa gat ttt cga att att cag     240
Ser Leu Gly Thr Ile Ile Ile Lys Cys Lys Asp Phe Arg Ile Ile Gln
 65                  70                 75                 80

ttg gat att cct gga atg gag gaa tgc ttg aat ata gcc agt tcc att     288
Leu Asp Ile Pro Gly Met Glu Glu Cys Leu Asn Ile Ala Ser Ser Ile
 81                  86                 91                 96

gag gca ttg tct act ctg gac tcc atc act ctg atg tac cct ttc ttt     336
Glu Ala Leu Ser Thr Leu Asp Ser Ile Thr Leu Met Tyr Pro Phe Phe
 97                  102                107                112

tac cgt cct atg ttt gaa gtg ata gaa gat ggc tgg cat tcc ttc ctt     384
Tyr Arg Pro Met Phe Glu Val Ile Glu Asp Gly Trp His Ser Phe Leu
113                 118                123                128

cct gag caa gaa ttt gaa ctc tat tct tca gct acc agt gaa tgg agg     432
Pro Glu Gln Glu Phe Glu Leu Tyr Ser Ser Ala Thr Ser Glu Trp Arg
129                 134                139                144

cta agc tat gtc aat aag gaa ttt gct gtc tgt ccc tct tac cca cca     480
Leu Ser Tyr Val Asn Lys Glu Phe Ala Val Cys Pro Ser Tyr Pro Pro
145                 150                155                160

att gtc aca gtg ccc aaa tcc atc gat gat gaa gct ctt cgg aag gta     528
Ile Val Thr Val Pro Lys Ser Ile Asp Asp Glu Ala Leu Arg Lys Val
161                 166                171                176

gct aca ttt cga cat gga ggg cgc ttc cca gta cta agc tat tac cac     576
Ala Thr Phe Arg His Gly Gly Arg Phe Pro Val Leu Ser Tyr Tyr His
177                 182                187                192

aaa aga aat ggg atg gta att atg cga agt ggt cag cca ctc act ggt     624
Lys Arg Asn Gly Met Val Ile Met Arg Ser Gly Gln Pro Leu Thr Gly
```

1893

```
aca aac ggg agg agg tgc aag gag gac gag aag ctg ata aat gct acc     672
Thr Asn Gly Arg Arg Cys Lys Glu Asp Glu Lys Leu Ile Asn Ala Thr
209                 214                 219                 224

ctc agg gct gga aag cgt ggc tac atc att gac acc cga tcc ctg aac     720
Leu Arg Ala Gly Lys Arg Gly Tyr Ile Ile Asp Thr Arg Ser Leu Asn
225                 230                 235                 240

gtg gct cag caa act aga gcc aaa gga ggt ggc ttt gaa caa gaa gct     768
Val Ala Gln Gln Thr Arg Ala Lys Gly Gly Gly Phe Glu Gln Glu Ala
241                 246                 251                 256

cat tat cct cag tgg agg cga att cat aag tcc att gag agg tat cac     816
His Tyr Pro Gln Trp Arg Arg Ile His Lys Ser Ile Glu Arg Tyr His
257                 262                 267                 272

att ctt cag gag agc tta atc aaa ctt gtg gaa gct tgt aat gac caa     864
Ile Leu Gln Glu Ser Leu Ile Lys Leu Val Glu Ala Cys Asn Asp Gln
273                 278                 283                 288

aca cat aac atg gac cga tgg ctc agt aaa ttg gag gcc tct aac tgg     912
Thr His Asn Met Asp Arg Trp Leu Ser Lys Leu Glu Ala Ser Asn Trp
289                 294                 299                 304

ctg act cac atc aaa gag att ctg aca acc gcc tgc cta gcg gct cag     960
Leu Thr His Ile Lys Glu Ile Leu Thr Thr Ala Cys Leu Ala Ala Gln
305                 310                 315                 320

tgc atc gac agg gaa gga gca tca ata ttg att cac gga aca gaa gga    1008
Cys Ile Asp Arg Glu Gly Ala Ser Ile Leu Ile His Gly Thr Glu Gly
321                 326                 331                 336

act gat tcc aca ctc cag gtg acc tcc ttg gcc cag atc atc tta gag    1056
Thr Asp Ser Thr Leu Gln Val Thr Ser Leu Ala Gln Ile Ile Leu Glu
337                 342                 347                 352

cca aga agc agg acc att cgt ggt ttt gag gcc ctg att gaa aga gag    1104
Pro Arg Ser Arg Thr Ile Arg Gly Phe Glu Ala Leu Ile Glu Arg Glu
353                 358                 363                 368

tgg ctg cag gct ggt cac cca ttc cag cag cgc tgt gca cag tca gcc    1152
Trp Leu Gln Ala Gly His Pro Phe Gln Gln Arg Cys Ala Gln Ser Ala
369                 374                 379                 384

tac tgt aac acc aag cag aag tgg gag gct cct gta ttt ctt ctc ttc    1200
Tyr Cys Asn Thr Lys Gln Lys Trp Glu Ala Pro Val Phe Leu Leu Phe
385                 390                 395                 400

ttg gac tgc gtg tgg cag atc ctt cgt cag ttt ccc tgt tct ttt gag    1248
Leu Asp Cys Val Trp Gln Ile Leu Arg Gln Phe Pro Cys Ser Phe Glu
401                 406                 411                 416

ttt aat gag att ttc ctc atc atg ctc ttt gag cat gct tat gcc tca    1296
Phe Asn Glu Ile Phe Leu Ile Met Leu Phe Glu His Ala Tyr Ala Ser
417                 422                 427                 432
```

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cag ttt gga aca ttt ctg ggc aac aat gaa agt gaa aga tgt aag ttg        1344
Gln Phe Gly Thr Phe Leu Gly Asn Asn Glu Ser Glu Arg Cys Lys Leu
433             438             443                     448

aag cta cag cag aag acg atg tct ttg tgg tcc tgg gtt aat cag ccc        1392
Lys Leu Gln Gln Lys Thr Met Ser Leu Trp Ser Trp Val Asn Gln Pro
449             454             459                     464

agt gag ctg agt aaa ttc acc aat ccc ctc ttt gaa gcc aac aac ctt        1440
Ser Glu Leu Ser Lys Phe Thr Asn Pro Leu Phe Glu Ala Asn Asn Leu
465             470             475                     480

gtc atc tgg cct tca gtt gct ccg cag agt ctt cca ctg tgg gaa ggt        1488
Val Ile Trp Pro Ser Val Ala Pro Gln Ser Leu Pro Leu Trp Glu Gly
481             486             491                     496

att ttc cta cgt tgg aat aga tcc tct aag tat ttg gat gaa gca tat        1536
Ile Phe Leu Arg Trp Asn Arg Ser Ser Lys Tyr Leu Asp Glu Ala Tyr
497             502             507                     512

gaa gaa atg gtt aac atc att gaa tat aat aaa gaa tta caa gca aaa        1584
Glu Glu Met Val Asn Ile Ile Glu Tyr Asn Lys Glu Leu Gln Ala Lys
513             518             523                     528

gtc aat atc ctt cga agg cag ttg gca gaa ctg gaa aca gag gac ggg        1632
Val Asn Ile Leu Arg Arg Gln Leu Ala Glu Leu Glu Thr Glu Asp Gly
529             534             539                     544

atg cag gag agt ccc tga aaggtc tcctcgcacc cttcgcaagg accttcttgg        1686
Met Gln Glu Ser Pro  *
545             550

gcctgtgtcc gccgttctct ccttgtgccc ttcagttcac ttttacacgg tagccttgaa      1746

gtgaaggctt tagatgtggg accccctaa tgtaatggat ttctcaatac tgtatgaata        1806

atgaaactta ctatcataaa ccatgtttca tgtggcctgt tagggcctgt cactttggga       1866

gccggaagga ggtgctagtc attttatttt tacgtgaaat agatgaccta tttaatgcca       1926

tttgtgtttc atgccatttt atccaaagct ttttctctgt gtccactctc caaacagcat       1986

tctagagcag tcaaggagac agctaatctc tctagggact atttggtggt ttaaaaaaag       2046

ggtcagactt ttaaacactc tgaccataga aatgtttttc aaaatggcaa caatggataa       2106

accaaggatt ttgtgtttaa caatccattt ccagtgtctt cgccacataa aatagccatt       2166

ttctttaaaa tagttttgga ctaacgaagc tgaaatctat tctcattctt gtttgtcaag       2226

aaaggaaaat ctgttattca aggtaaatta tttctacaag ggcaacaggt atggtcctcc       2286

gatatttaca ttaagaagag ttaaatttat tttaacgtag acactaaaag tatgtgcaat       2346

atacaattaa agtaggaatt tgttactgat tgagaattgt tactggtgaa ttggttttca       2406
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1895

ggttttgagc atacatatac aatgtgtttc aaatgctgct tgtaaaatta aaccatcatc 2466

tagaatagag ttaatttatt ataatcaagc tacaaatagg ttttcttaaa ccagagatgc 2526

actgcccttg tctaaagttc ttattgcact ggtttatatg tgtatgtgtg ttttattgtg 2586

tgtttttta atttgtaagt attctaagag tttcctaata ctaaggttaa aattttcatg 2646

ttgacctgag cctttttgcaa atttgctttg gctctattga tttgtccatt atgtgttagg 2706

caaatataac ttaagtggag ggggaagttt atgaatataa tatagctctg tgttttaaac 2766

ctcagaaaca gatttgagtg tttcagtatt atagaaacag tgatgactat tcatgctctg 2826

ctagtctatg cctgcaactc caaatgtttg tggttcagta tttcccacct acatttctgt 2886

ttggtgacat tgctcatttt aacaaatatg accgagtcta gtttttcttt aaaaggatag 2946

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acacactaca ctgaaccctg ctttagagct gtgtgttgag ctaaaaatat aattttttaa 3066

aaattgacta gcaaaatcta tggccacact gagaagcctt tgaaaatggc aaatactttt 3126

catcaccaat tgcccaattc atctttcttc tgcttcctca gccttgtagc aaaggctaca 3186

cagcagccca cagtccacag tctttttggg aaaattggcc tgccaccttc tttaagctca 3246

gtttatttt gacttacttt ctttgctgta gttatgaacc ttggggcatt aaaatcccat 3306

ggcaaggagc ataagagatg ttctcgtagc tctgcgttgt gtgaaatgtc catcttagtt 3366

ttgttaaaaa aaaaaaaaag tcgagcggcc gcgaagcgag tagtagtagg cggccgctct 3426

agaggatcca agcttacgta cgcgtgcatg cgacgtcata gctc 3470

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1896

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gtgtcttgct cacatcgtaa atgactttct ctccgaaacg ctaaatattc tttcccgcag        180

gagctcatat ccttattttc c atg aca gat ctt aac gac aat ata tgc aaa        231
                         Met Thr Asp Leu Asn Asp Asn Ile Cys Lys
                          1               5

aga tat ata aag atg ata act aat ata gtt ata ctg agc ctg atc att        279
Arg Tyr Ile Lys Met Ile Thr Asn Ile Val Ile Leu Ser Leu Ile Ile
 11          16              21              26

tgc att tcg tta gct ttc tgg att ata tca atg act gca agc acc tat        327
Cys Ile Ser Leu Ala Phe Trp Ile Ile Ser Met Thr Ala Ser Thr Tyr
 27              32              37              42

tat ggt aac tta cga cct att tct ccg tgg cgt tgg ctg ttt tct gtt        375
Tyr Gly Asn Leu Arg Pro Ile Ser Pro Trp Arg Trp Leu Phe Ser Val
 43              48              53              58

gtt gtt cct gtt ctg atc gtc tct aat ggc ctt aaa aag aaa agt cta        423
Val Val Pro Val Leu Ile Val Ser Asn Gly Leu Lys Lys Lys Ser Leu
 59              64              69              74

gat cac agt ggg gct cta gga ggg cta gtc gtt gga ttt atc cta acc        471
Asp His Ser Gly Ala Leu Gly Gly Leu Val Val Gly Phe Ile Leu Thr
 75              80              85              90

att gca aat ttc agc ttt ttt acc tct ttg ctg atg ttt ttc ttg tct        519
Ile Ala Asn Phe Ser Phe Phe Thr Ser Leu Leu Met Phe Phe Leu Ser
 91              96              101             106

tct tcg aaa ctc act aaa tgg aag gga gaa gtg aag aag cgt cta gat        567
Ser Ser Lys Leu Thr Lys Trp Lys Gly Glu Val Lys Lys Arg Leu Asp
 107             112             117             122

tca gaa tat aag gaa ggt ggg caa agg aat tgg gtt cag gtg ttc tgt        615
Ser Glu Tyr Lys Glu Gly Gly Gln Arg Asn Trp Val Gln Val Phe Cys
 123             128             133             138

aat gga gct gta ccc aca gaa ctg gcc ctg ctg tac atg ata gaa aat        663
Asn Gly Ala Val Pro Thr Glu Leu Ala Leu Leu Tyr Met Ile Glu Asn
 139             144             149             154

ggc ccc ggg gaa atc cca gtc gat ttt tcc aag cag tac tcc gct tcc        711
Gly Pro Gly Glu Ile Pro Val Asp Phe Ser Lys Gln Tyr Ser Ala Ser
 155             160             165             170

tgg atg tgt ttg tct ctc ttg gct gca ctg gcc tgc tct gct gga gac        759
Trp Met Cys Leu Ser Leu Leu Ala Ala Leu Ala Cys Ser Ala Gly Asp
 171             176             181             186

aca tgg gct tca gaa gtt ggc cca gtt ctg agt aaa agt tct cca aga        807
Thr Trp Ala Ser Glu Val Gly Pro Val Leu Ser Lys Ser Ser Pro Arg
 187             192             197             202

ctg ata aca acc tgg gag aaa gtt cca gtt ggt acc aat gga gga gtt        855
Leu Ile Thr Thr Trp Glu Lys Val Pro Val Gly Thr Asn Gly Gly Val
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1897

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         203                    208                    213                    218

aca gtg gtg ggc ctt gtc tcc agt ctc ctt ggt ggt acc ttt gtg ggc            903
Thr Val Val Gly Leu Val Ser Ser Leu Leu Gly Gly Thr Phe Val Gly
219                    224                    229                    234

att gca tac ttc ctc aca cag ctg att ttt gtg aat gat tta gac att            951
Ile Ala Tyr Phe Leu Thr Gln Leu Ile Phe Val Asn Asp Leu Asp Ile
235                    240                    245                    250

tct gcc ccg cag tgg cca att att gca ttt ggt ggt tta gct gga tta            999
Ser Ala Pro Gln Trp Pro Ile Ile Ala Phe Gly Gly Leu Ala Gly Leu
251                    256                    261                    266

cta gga tca att gtg gac tca tac tta ggg gct aca atg cag tat act            1047
Leu Gly Ser Ile Val Asp Ser Tyr Leu Gly Ala Thr Met Gln Tyr Thr
267                    272                    277                    282

ggg ttg gat gaa agc act ggc atg gtg gtc aac agc cca aca aat aag            1095
Gly Leu Asp Glu Ser Thr Gly Met Val Val Asn Ser Pro Thr Asn Lys
283                    288                    293                    298

gca agg cac ata gca ggg aaa ccc att ctt gat aac aac gca gtg aat            1143
Ala Arg His Ile Ala Gly Lys Pro Ile Leu Asp Asn Asn Ala Val Asn
299                    304                    309                    314

ctg ttt tct tct gtt ctt att gcc ctc ttg ctc cca act gct gct tgg            1191
Leu Phe Ser Ser Val Leu Ile Ala Leu Leu Leu Pro Thr Ala Ala Trp
315                    320                    325                    330

ggt ttt tgg ccc agg ggg tga ac tttatttcat ttccacaggt tgaaactggt           1244
Gly Phe Trp Pro Arg Gly  *
331                    336

gagtccagct aaatttgcaa ttccaacttt catcctaaga ataataactg taatggcaaa          1304

gcggaaatgc cagttcctcc tgtattccat tgagatggga tttcacattt tcctctcatc          1364

aactcccctg taatagctag cgtctttcta gtgaaagaga agaattccta gaacttatgc          1424

atttttttcc tgctgaatgg aagtcttgag caatgaagct atattgtccc tacatattac          1484

tatatattga actgaaagtt cttacataat caatgtcaag ttttgtctta ttttgttttg          1544

tttgtttaaa ccagtgtagg aaataaaagt gatgatattt aaaatagttc tcagttgaag          1604

cagagaaatg ccactgtgct agttgcccaa atgttgtatc tattttaaat agtttaagct          1664

gatgtgtatg ggagcctaaa caagtgtagt atcctgaact tctcccatta attgctattc          1724

acaattggga aaagtgtgga gattggttcc tagtgagttt tgtggcctac tccacatttg          1784

ttcttccttc ctcagggtta gtgatgaaaa aaagtaaata tcttttcat atgtccatta           1844

gaatgtatga aaaaaatcat tttaactaaa agcaaaagaa ttttatctta tatctaaaaa          1904

atatataact tactatatgt ttcagttgct ctctgaacaa aaattatctt caatttaata          1964
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1898

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tgtggaatgt gttttctagc tttctttgaa ttatgtatgg caacctggtt tagcactggc      2024

atcctgaaca gttaagagtc actgggaaat tattgtattt ctttataaat ttactgtcat      2084

atcaattgct ggaaatgct atgatttttc tattattacc ttctaagttg tattctctct      2144

tacactgtag cctcaactaa ggcaattctg ctatgtttgt cttcactat gatttactgt       2204

gtgccaaagg agttttgaca gggtacagag tattttacta aaagtatttt taaatgtttc      2264

tcatgtgatt tctgtacctt cttcctcctg ccccttttgc ttttttaaag aaactgggga      2324

aggatttatg aatacaccac caccagagtg ataatgctt agaattcttt attggtggcc        2384

ctactatggt gatgatctag aactgactta cttcaggaca gaagaaaaaa caatcacacc      2444

cttaaccttt aagccagtta gatcaggggg ttgcaacaat tgggttaaac tttgggtata      2504

cattggaagc accagggcat gtttgctttt tttgtttatg tgtttgtttt ttgagacaga      2564

gtctcacact gtgttcccag ccactcggga ggctgaggca ggagaatcgc tggaacctgg      2624

gatgtggagg ttgcagtgag ccaagattgc accactgtac tccagcctgg caacagagg       2684

gagactccat ctagactcca tctcananna naaaaaaaaa aaaa                       2728




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gtaaagaagc agctcttgaa gctcaccttg tccctgtctt gcactctctc tggccttgga     180

ttttgatgga tgattcattg atgcaaattt ctctgcagct cctttgtgtc tatactgcaa      240

atttccaaa tggttgcagt tctctttgtt ggtcaagttg tggacaacac cctgttcaag        300

ctacacatag aggagccgtg agcaactctc tgg atg ctg tgt atc cta aag ttg        354
                                     Met Leu Cys Ile Leu Lys Leu
                                      1                   5

gct tcc cag atg cca ctg gag aac acc acg gtt cag cag atg gtt ttt        402
Ala Ser Gln Met Pro Leu Glu Asn Thr Thr Val Gln Gln Met Val Phe
 8              13                  18                  23
```

1899

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atg ctt ctt tca aac ctg gcc ttg tcg cat gac tgt aaa gga gta att        450
Met Leu Leu Ser Asn Leu Ala Leu Ser His Asp Cys Lys Gly Val Ile
 24              29              34              39

cag aag agt aac ttc tta cag aac ttc ctc tct cta gca ttg cca aaa        498
Gln Lys Ser Asn Phe Leu Gln Asn Phe Leu Ser Leu Ala Leu Pro Lys
 40              45              50              55

gga gga aat aaa cat cta agt aat ctg act att ctt tgg ttg aag tta        546
Gly Gly Asn Lys His Leu Ser Asn Leu Thr Ile Leu Trp Leu Lys Leu
 56              61              66              71

ctc ctg aat ata tca tct gga gaa gat ggg caa caa atg att ctg agg        594
Leu Leu Asn Ile Ser Ser Gly Glu Asp Gly Gln Gln Met Ile Leu Arg
 72              77              82              87

ctt gat ggc tgt cta gac tta cta aca gag atg agc aaa tac aag cac        642
Leu Asp Gly Cys Leu Asp Leu Leu Thr Glu Met Ser Lys Tyr Lys His
 88              93              98             103

aag agc agc cct tta ttg cct ctt ctt atc ttt cat aat gtt tgc ttc        690
Lys Ser Ser Pro Leu Leu Pro Leu Leu Ile Phe His Asn Val Cys Phe
104             109             114             119

agt cct gca aat aaa ccc aag atc ctg gct aat gaa aaa gtc att act        738
Ser Pro Ala Asn Lys Pro Lys Ile Leu Ala Asn Glu Lys Val Ile Thr
120             125             130             135

gtg ctt gct gcc tgt ctg gaa agt gag aat caa aat gct cag agg att        786
Val Leu Ala Ala Cys Leu Glu Ser Glu Asn Gln Asn Ala Gln Arg Ile
136             141             146             151

gga gca gct gcc ctt tgg gct ctg att tac aat tat cag aag gca aaa        834
Gly Ala Ala Ala Leu Trp Ala Leu Ile Tyr Asn Tyr Gln Lys Ala Lys
152             157             162             167

aca gct ttg aaa agc cca tca gta aaa aga aga gtg gat gaa gca tac        882
Thr Ala Leu Lys Ser Pro Ser Val Lys Arg Arg Val Asp Glu Ala Tyr
168             173             178             183

tcc tta gca aag aaa act cct taa ttcttcctga gtgccatggg atgctacacc       936
Ser Leu Ala Lys Lys Thr Pro *
184             189

ttgaagctga cagtcatcaa caggggagct aaagttgaag ccagctgtgt gtagcagctg       996

ttacctgaag acgtgctacc tctctacaaa gtgttgatcc ccttctttcc catgagagag      1056

agaactggtg atactccaac accgtccagt tgtggcagct ctccagaagt aatagcagct      1116

gacaactttc tgtgcctttt cctttctgtt gaaaaggcat agaaagttct gggaacataa      1176

acatttttac ccttttctat gccatttatt ttgtaaaaat cctatttaac agttatttaa      1236

taaaacaata tttttagaaa ctaaaaaaaa aaa                                   1270
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1900

<210> 574
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<400> 574

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cagagtctgg ggtccctgga ctgagccatc agctgggtca ctgagaccca tggcaaggaa       120

acaaaatagg aattccaagg aactgggcct agttcccctc acagatgaca ccagccacgc       180

caggcctcca gggccaggga gggcactgct ggagtgtgac cacctgagga gtggggtgcc       240

aggtggaagg agaagaaagg actggtcctg ctcgctcctc gtggcctccc tcgcgggcgc       300

cttcggctcc tccttcctct acggctacaa cctgtcggtg gtga atg ccc cca ccc       356
                                                   Met Pro Pro Pro
                                                     1

cgg aag cac act ttg ctg gcc aat aat ggg ttt gca att tct gct gca       404
Arg Lys His Thr Leu Leu Ala Asn Asn Gly Phe Ala Ile Ser Ala Ala
  5               10                  15                  20

ttg ctg atg gcc tgc tcg ctc cag gca gga gcc ttt gaa atg ctc atc       452
Leu Leu Met Ala Cys Ser Leu Gln Ala Gly Ala Phe Glu Met Leu Ile
 21                  26                  31                  36

gtg gga cgc ttc atc atg ggc ata gat gga ggc gtc gcc ctc agt gtg       500
Val Gly Arg Phe Ile Met Gly Ile Asp Gly Gly Val Ala Leu Ser Val
 37                  42                  47                  52

ctc ccc atg tac ctt agt gag atc tca ccc aag gag atc cgt ggc tct       548
Leu Pro Met Tyr Leu Ser Glu Ile Ser Pro Lys Glu Ile Arg Gly Ser
 53                  58                  63                  68

ctg ggg cag gtg act gcc atc ttt atc tgc att ggc gtg ttc act ggg       596
Leu Gly Gln Val Thr Ala Ile Phe Ile Cys Ile Gly Val Phe Thr Gly
 69                  74                  79                  84

cag ctt ctg ggc ctg ccc gag ctg ctg gga aag gag agt acc tgg cca       644
Gln Leu Leu Gly Leu Pro Glu Leu Leu Gly Lys Glu Ser Thr Trp Pro
/85                  90                  95                 100

tac ctg ttt gga gtg att gtg gtc cct gcc gtt gtc cag ctg ctg agc       692
```

1901

```
Tyr Leu Phe Gly Val Ile Val Val Pro Ala Val Val Gln Leu Leu Ser
101             106             111             116

ctt ccc ttt ctc ccg gac agc cca cgc tac ctg ctc ttg gag aag cac    740
Leu Pro Phe Leu Pro Asp Ser Pro Arg Tyr Leu Leu Leu Glu Lys His
117             122             127             132

aac gag gca aga gct gtg aaa gcc ttc caa acg ttc ttg ggt aaa gca    788
Asn Glu Ala Arg Ala Val Lys Ala Phe Gln Thr Phe Leu Gly Lys Ala
133             138             143             148

cac gtt tcc caa gag gta gag gag gtc ctg gct gag agc cgc gtg cag    836
His Val Ser Gln Glu Val Glu Glu Val Leu Ala Glu Ser Arg Val Gln
149             154             159             164

agg agc atc cgc ctg gtg tcc gtg ctg gag ctg ctg aga gct ccc tac    884
Arg Ser Ile Arg Leu Val Ser Val Leu Glu Leu Leu Arg Ala Pro Tyr
165             170             175             180

gtc cgc tgg cag gtg gtc acc gtg att gtc acc atg gcc tgc tac cag    932
Val Arg Trp Gln Val Val Thr Val Ile Val Thr Met Ala Cys Tyr Gln
181             186             191             196

ctc tgt ggc ctc aat gca att tgg ttc tat acc aac agc atc ttt gga    980
Leu Cys Gly Leu Asn Ala Ile Trp Phe Tyr Thr Asn Ser Ile Phe Gly
197             202             207             212

aaa gct ggg atc cct ccg gca aag atc cca tac gtc acc ttg agt aca   1028
Lys Ala Gly Ile Pro Pro Ala Lys Ile Pro Tyr Val Thr Leu Ser Thr
213             218             223             228

ggg ggc atc gag act ttg gct gcc gtc ttc tct ggt ttg gtc att gag   1076
Gly Gly Ile Glu Thr Leu Ala Ala Val Phe Ser Gly Leu Val Ile Glu
229             234             239             244

cac ctg gga cgg aga ccc ctc ctc att ggt ggc ttt ggg ctc atg ggc   1124
His Leu Gly Arg Arg Pro Leu Leu Ile Gly Gly Phe Gly Leu Met Gly
245             250             255             260

ctc ttc ttt ggg acc ctc acc atc acg ctg acc ctg cag gac cac gcc   1172
Leu Phe Phe Gly Thr Leu Thr Ile Thr Leu Thr Leu Gln Asp His Ala
261             266             271             276

ccc tgg gtc ccc tac ctg agt atc gtg ggc att ctg gcc atc atc gcc   1220
Pro Trp Val Pro Tyr Leu Ser Ile Val Gly Ile Leu Ala Ile Ile Ala
277             282             287             292

tct ttc tgc agt ggg cca ggt ggc atc ccg ttc atc ttg act ggt gag   1268
Ser Phe Cys Ser Gly Pro Gly Gly Ile Pro Phe Ile Leu Thr Gly Glu
293             298             303             308

ttc ttc cag caa tct cag cgg ccg gct gcc ttc atc att gca ggc acc   1316
Phe Phe Gln Gln Ser Gln Arg Pro Ala Ala Phe Ile Ile Ala Gly Thr
309             314             319             324

gtc aac tgg ctc tcc aac ttt gct gtt ggg ctc ctc ttc cca ttc att   1364
Val Asn Trp Leu Ser Asn Phe Ala Val Gly Leu Leu Phe Pro Phe Ile
```

1902

```
cag aaa agt ctg gac acc tac tgt ttc cta gtc ttt gct aca att tgt    1412
Gln Lys Ser Leu Asp Thr Tyr Cys Phe Leu Val Phe Ala Thr Ile Cys
341                 346                 351                 356

atc aca ggt gct atc tac ctg tat ttt gtg ctg cct gag acc aaa aac    1460
Ile Thr Gly Ala Ile Tyr Leu Tyr Phe Val Leu Pro Glu Thr Lys Asn
357                 362                 367                 372

aga acc tat gca gaa atc agc cag gca ttt tcc aaa agg aac aaa gca    1508
Arg Thr Tyr Ala Glu Ile Ser Gln Ala Phe Ser Lys Arg Asn Lys Ala
373                 378                 383                 388

tac cca cca gaa gag aaa atc gac tca gct gtc act gat ggt aag ata    1556
Tyr Pro Pro Glu Glu Lys Ile Asp Ser Ala Val Thr Asp Gly Lys Ile
389                 394                 399                 404

aat gga agg cct taa caagtttcct cctccacgtt ggacaattat gtcaaaaaca    1611
Asn Gly Arg Pro  *
405

ggattgtcta catggatgat ctcacttttc aggaaactta aaatttaccc attattggga    1671

agcttaaatg aattgaagct atgcaagtct tttatattat taaatattta aaagtaaacc    1731

tgtactaatc taacattgca actgtgttag cattattcac aactgaatct cccaaaccct    1791

tctggaagct gcaaggaatc actctatgtt tcagtagacc cagcgttctt ctatataggt    1851

agatgacctg ccttcttcat gactcaaccc atgatttcaa aatgaaattg gggaaatagt    1911

aggttaatgc tttatcaaag aaaaatcaat ttggtctgat aggggactca acggattaga    1971

gatcacagac tgaggttcta gtcccagctt taccacaagc agccttgacc tgccctcaac    2031

ctgggtccca gtgcctcaat gaccctaggc ttccatccct gatataggct ttcagaagtc    2091

agtggaaaga ttattcatag tgcctaagaa atgcctgttt ccaatatttg accttgtgga    2151

tctcaggctt tggagagcct aataccaaca caccagcctg cagattttgt ctttcccaaa    2211

ctgtgttcca ggaatgggct caaaacttca gggctgacgc tgtcctcacc ccagactatt    2271

agagtcctgt gtgctcacag agaacatgaa gaagagcaat gtgtagaaga cttaactttc    2331

tcataactgc agcagggact gaaaattgac ctccatccaa atgaaaaata atgttgagga    2391

tgattctaaa gctaaaccta ggcttgggtg ggaaaaaana aaaaaatttg tggattaatt    2451

gggtggatcc tctggcccac aagttgtggg ggctcagagt gtcagcacat gtacctcatg    2511

tttaccaagt ctagaagaga tttctctgaa aaggtaatga gctgtcttga aaaatgggga    2571

gttcaccatc actcaaagtg ctcaagggaa gactgggtga ttactcatct tgactgttgc    2631

taagaaaatc tgtgtcaact ttggaggaag gtgtttggaa tagatatgtt gaggggctct    2691
```

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tctaactctt acatgctaaa gttgtttgag taagatctac ttacagcctg ccatcgtaat   2751

gtgtggcttg tggtttgggc gatttcctat acttgcttct aaaatgaaac aacgtgtcct   2811

aaagtaaagt aaagtgcact tgaattagca a                                   2842




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     <222> (293)..(1996)

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     <222> (1)...(3475)
     <223> n = a,t,c or g

     <400> 575
aaacgcagat tcctcatcgc attctcagag attctgttgg ttagtattgg gatggggcct     60

tttttccccc atgattctac gcggccacgt gttggtaacc aatatacaga tgactgggtc    120

cttcccagtc ccacgcgttt actcgatgaa ggcagcctcc caccgggctc ctggccccgc    180

ccgagcccca cccctgctc ccttccggcc cggactgggt cccatcgccc cacctccggt      240

cgctggacgt gctctcgcgt agctccgcct ttcgtaagtc cccccgcctc gc      atg    295
                                                             Met
                                                              1


atg gct gcg gtg ccg ccg ggc ctg gag ccg tgg aac cgt gtg aga atc     343
Met Ala Ala Val Pro Pro Gly Leu Glu Pro Trp Asn Arg Val Arg Ile
 2               7               12                      17


cct aag gcg ggg aac cgc agc gca gtg aca gtg cag aac ccc ggc gcg     391
Pro Lys Ala Gly Asn Arg Ser Ala Val Thr Val Gln Asn Pro Gly Ala
 18              23              28                      33


gcc ctt gac ctt tgc att gca gct gta att aaa gaa tgc cat ctc gtc     439
Ala Leu Asp Leu Cys Ile Ala Ala Val Ile Lys Glu Cys His Leu Val
 34              39              44                      49


ata ctg tcg ctg aag agc caa acc tta gat gca gaa aca gat gtg tta     487
Ile Leu Ser Leu Lys Ser Gln Thr Leu Asp Ala Glu Thr Asp Val Leu
 50              55              60                      65


tgt gca gtc ctt tac agc aat cac aac aga atg ggc cgc cac aaa ccc     535
Cys Ala Val Leu Tyr Ser Asn His Asn Arg Met Gly Arg His Lys Pro
 66              71              76                      81
```

1904

```
cat ttg gcc ctc aaa cag gtt gag caa tgt tta aag cgt ttg aaa aac        583
His Leu Ala Leu Lys Gln Val Glu Gln Cys Leu Lys Arg Leu Lys Asn
82                  87                  92                  97

atg aat ttg gag ggc tca att caa gac ctg ttt gag ttg ttt tct tcc        631
Met Asn Leu Glu Gly Ser Ile Gln Asp Leu Phe Glu Leu Phe Ser Ser
98                  103                 108                 113

aat gaa aat cag ccc tta act acc aaa gta tgt gtt gtc ccc agt cag        679
Asn Glu Asn Gln Pro Leu Thr Thr Lys Val Cys Val Val Pro Ser Gln
114                 119                 124                 129

cca gtg gtg gag ttg gtg ttg atg aag gtt ttg gga gcc tgc aag ttg        727
Pro Val Val Glu Leu Val Leu Met Lys Val Leu Gly Ala Cys Lys Leu
130                 135                 140                 145

ttg ctc cgc ttg ttg gac tgc tgc tgc aaa act ttt ctt ttg act gtg        775
Leu Leu Arg Leu Leu Asp Cys Cys Cys Lys Thr Phe Leu Leu Thr Val
146                 151                 156                 161

aaa cat cta ggt ttg caa gag ttc att att tta aac ctt gtg atg gtt        823
Lys His Leu Gly Leu Gln Glu Phe Ile Ile Leu Asn Leu Val Met Val
162                 167                 172                 177

ggg ctg gtg agc agg tta tgg gtt ctc tat aaa ggt gtc tta aaa agg        871
Gly Leu Val Ser Arg Leu Trp Val Leu Tyr Lys Gly Val Leu Lys Arg
178                 183                 188                 193

ttg att ttg tta tat gag cct ttg ttt gga ttg ctt caa gag gtc gct        919
Leu Ile Leu Leu Tyr Glu Pro Leu Phe Gly Leu Leu Gln Glu Val Ala
194                 199                 204                 209

agg att caa cca atg cct tac ttc aaa gat ttt acc ttt cct tct gat        967
Arg Ile Gln Pro Met Pro Tyr Phe Lys Asp Phe Thr Phe Pro Ser Asp
210                 215                 220                 225

atc act gaa ttt tta gga cag cca tat ttt gaa gcc ttt aag aaa aaa       1015
Ile Thr Glu Phe Leu Gly Gln Pro Tyr Phe Glu Ala Phe Lys Lys Lys
226                 231                 236                 241

atg cct ata gct ttt gca gct aaa gga ata aat aaa ttg cta aat aaa       1063
Met Pro Ile Ala Phe Ala Ala Lys Gly Ile Asn Lys Leu Leu Asn Lys
242                 247                 252                 257

ctg ttt tta ata aat gag cag tca cca aga gcc agt gaa gaa acc ttg       1111
Leu Phe Leu Ile Asn Glu Gln Ser Pro Arg Ala Ser Glu Glu Thr Leu
258                 263                 268                 273

ctt gga att tca aaa aaa gct aaa caa atg aag atc aat gta cag aat       1159
Leu Gly Ile Ser Lys Lys Ala Lys Gln Met Lys Ile Asn Val Gln Asn
274                 279                 284                 289

aat gtg gat ctt gga cag cca gta aag aat aag aga gtc ttc aaa gaa       1207
Asn Val Asp Leu Gly Gln Pro Val Lys Asn Lys Arg Val Phe Lys Glu
290                 295                 300                 305

gag tca tca gaa ttt gat gtg agg gct ttc tgc aac cag ctg aaa cac       1255
```

1905

```
Glu Ser Ser Glu Phe Asp Val Arg Ala Phe Cys Asn Gln Leu Lys His
306             311             316             321


aaa gct act cag gag acc agt ttt gat ttt aaa tgt tct caa tcc aga     1303
Lys Ala Thr Gln Glu Thr Ser Phe Asp Phe Lys Cys Ser Gln Ser Arg
322             327             332             337


cta aag aca acc aag tat tct tct cag aaa gtg ata gga act cct cat     1351
Leu Lys Thr Thr Lys Tyr Ser Ser Gln Lys Val Ile Gly Thr Pro His
338             343             348             353


gcc aaa agt ttt gtg caa aga ttc cga gag gct gag tcc ttc aca caa     1399
Ala Lys Ser Phe Val Gln Arg Phe Arg Glu Ala Glu Ser Phe Thr Gln
354             359             364             369


ctt tct gaa gaa atc cag atg gca gtt gta tgg tgc agg agc aaa aaa     1447
Leu Ser Glu Glu Ile Gln Met Ala Val Val Trp Cys Arg Ser Lys Lys
370             375             380             385


ctc aag gct cag gcc att ttt ctg ggt aac aaa ctt ctt aaa agc aac     1495
Leu Lys Ala Gln Ala Ile Phe Leu Gly Asn Lys Leu Leu Lys Ser Asn
386             391             396             401


cgg ctt aaa cat ctg gaa gct caa ggt act agt ttg cca aag aaa cta     1543
Arg Leu Lys His Leu Glu Ala Gln Gly Thr Ser Leu Pro Lys Lys Leu
402             407             412             417


gag tgc ata aaa acg tct att tgc aac cac ctt ctt cgt ggc tca ggt     1591
Glu Cys Ile Lys Thr Ser Ile Cys Asn His Leu Leu Arg Gly Ser Gly
418             423             428             433


atc aaa act tca aag cat cat ctg aga cag aga aga tca cag aat aaa     1639
Ile Lys Thr Ser Lys His His Leu Arg Gln Arg Arg Ser Gln Asn Lys
434             439             444             449


ttt tta cgg aga caa agg aaa cca cag aga aag ttg cag tcg act ctt     1687
Phe Leu Arg Arg Gln Arg Lys Pro Gln Arg Lys Leu Gln Ser Thr Leu
450             455             460             465


tta agg gaa att cag cag ttc tct caa ggg act cgg aag agt gct aca     1735
Leu Arg Glu Ile Gln Gln Phe Ser Gln Gly Thr Arg Lys Ser Ala Thr
466             471             476             481


gat acc agt gct aag tgg aga ctc tca cac tgt act gtg cat aga act     1783
Asp Thr Ser Ala Lys Trp Arg Leu Ser His Cys Thr Val His Arg Thr
482             487             492             497


gat ctc tac cct aac agt aag cag ctc ttg aat agt gga gtt tca atg     1831
Asp Leu Tyr Pro Asn Ser Lys Gln Leu Leu Asn Ser Gly Val Ser Met
498             503             508             513


cct gtc ata caa act aag gag aaa atg att cat gaa aat ctt aga ggc     1879
Pro Val Ile Gln Thr Lys Glu Lys Met Ile His Glu Asn Leu Arg Gly
514             519             524             529


atc cat gaa aat gaa act gat tcg tgg acg gtg atg caa ata aat aaa     1927
Ile His Glu Asn Glu Thr Asp Ser Trp Thr Val Met Gln Ile Asn Lys
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aac agt aca tca gga acc att aag gag aca gat gac att gat gat att    1975
Asn Ser Thr Ser Gly Thr Ile Lys Glu Thr Asp Asp Ile Asp Asp Ile
546             551                 556                 561

ttt gct tta atg gga gtt tag at gttcgttcat atgtgagact tttaagtgat   2028
Phe Ala Leu Met Gly Val  *
562             567
```

```
taacaaggct agttcagtgt tctaagtaga actgctaaga tctggaagta ccacctggac   2088

tcacagagga gctgctttag tgcagcattg cacaggagtt catttcagtt cagtctacat   2148

ttaaagtagc attgtgtcat ttcatcaaca agtatttctt ttttggcttc aactacatgt   2208

caggtgttaa tatgaaaaat ctgccacagc ctacccttga gaagcagatg taattccttg   2268

agtgaggcta gtaagtctct gaaaaactga ataattttat gacttactag gcaatttaat   2328

aatcgtttgc aaaaaccatt gtgtcttgag gtaaatgagg agcgggggtg ggagatagca   2388

aggaaacacc tgaaaggtca atttggtctt attggctcca ttatacatag gtccgcctct   2448

gaatactaaa gtttgtagct cctgacattt atgttttctt gtttatatgt tggaattgat   2508

caacaaggtt tgccactgct tgtattacca gggactggtt acaaccatta tttctcttca   2568

tttgcttggc ttatctcata ttaaagtgag tttggagttc tccaaaacgt tttaatttta   2628

tttatttggg taccagtgat tgattccaaa taaacctttt tacaaaaagg caataaggtg   2688

gtttatggtt acatatgaaa tataatagga taacaggtag atgagaaagt aaaatgaaaa   2748

aatgaggtta ggagatacaa agtagaccca ggaatgaggc tagaacattt ataatttggt   2808

gttgatgctg tcatctgata ggggatgttg ctcgtactgt tgctctgagg ggagtacatc   2868

ttgagtattt tcaaataatg atgtgaagtt tgaggtaggt atctttccaa tgttctaact   2928

ttactagaat taggttatta agcttctcta gtgcccttaa cttttgttac atagagattt   2988

aaagaaaaag aaagtagtac cttagtatgt accgcatcct tcttttcctc agccaccta    3048

tcataacaga agttatttcc cttccattct ttatttggct ttgttctttc cctgtctgcc   3108

ttctccattt tctcagttat ctctaccagt ggttctcaaa ctttagactt tttgagaatc   3168

acctggtggg ttgctaaaag atgcagatta gcccttttccc agagactgat aaacaggggc   3228

cagaaacctg cattttaac atggagccca agtgattttg atccaggtgg cccccaaatc    3288

cagttatata aacactactt tagcttctct cctgaagcct taagtaaact ggtttaattc   3348

ttaatctgta gtcagttttc atattcctga attccaccac actggactag tggatccgag   3408

ctcggtacca agcttaagtt taaacgctag ccagcttggg tctcgcaacc aaaannnggg   3468
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       <222> (293)..(1840)

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       <222> (1)...(3319)
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       <400> 576
aaacgcagat tcctcatcgc attctcagag attctgttgg ttagtattgg gatggggcct      60

tttttccccc atgattctac gcggccacgt gttggtaacc aatatacaga tgactgggtc     120

cttcccagtc ccacgcgttt actcgatgaa ggcagcctcc caccgggctc ctggccccgc     180

ccgagcccca cccctgctc ccttccggcc cggactgggt cccatcgccc cacctccggt      240

cgctggacgt gctctcgcgt agctccgcct ttcgtaagtc cccccgcctc gc      atg     295
                                                               Met
                                                                 1

atg gct gcg gtg ccg ccg ggc ctg gag ccg tgg aac cgt gtg aga atc     343
Met Ala Ala Val Pro Pro Gly Leu Glu Pro Trp Asn Arg Val Arg Ile
  2               7               12                      17

cct aag gcg ggg aac cgc agc gca gtg aca gtg cag aac ccc ggc gcg     391
Pro Lys Ala Gly Asn Arg Ser Ala Val Thr Val Gln Asn Pro Gly Ala
 18                  23                  28                  33

gcc ttg gtt gag caa tgt tta aag cgt ttg aaa aac atg aat ttg gag     439
Ala Leu Val Glu Gln Cys Leu Lys Arg Leu Lys Asn Met Asn Leu Glu
 34                  39                  44                  49

ggc tca att caa gac ctg ttt gag ttg ttt tct tcc aat gaa aat cag     487
Gly Ser Ile Gln Asp Leu Phe Glu Leu Phe Ser Ser Asn Glu Asn Gln
 50                  55                  60                  65

ccc tta act acc aaa gta tgt gtt gtc ccc agt cag cca gtg gtg gag     535
Pro Leu Thr Thr Lys Val Cys Val Val Pro Ser Gln Pro Val Val Glu
 66                  71                  76                  81

ttg gtg ttg atg aag gtt ttg gga gcc tgc aag ttg ttg ctc cgc ttg     583
Leu Val Leu Met Lys Val Leu Gly Ala Cys Lys Leu Leu Leu Arg Leu
 82                  87                  92                  97
```

```
ttg gac tgc tgc tgc aaa act ttt ctt ttg act gtg aaa cat cta ggt        631
Leu Asp Cys Cys Cys Lys Thr Phe Leu Leu Thr Val Lys His Leu Gly
 98             103             108             113

ttg caa gag ttc att att tta aac ctt gtg atg gtt ggg ctg gtg agc        679
Leu Gln Glu Phe Ile Ile Leu Asn Leu Val Met Val Gly Leu Val Ser
114             119             124             129

agg tta tgg gtt ctc tat aaa ggt gtc tta aaa agg ttg att ttg tta        727
Arg Leu Trp Val Leu Tyr Lys Gly Val Leu Lys Arg Leu Ile Leu Leu
130             135             140             145

tat gag cct ttg ttt gga ttg ctt caa gag gtc gct agg att caa cca        775
Tyr Glu Pro Leu Phe Gly Leu Leu Gln Glu Val Ala Arg Ile Gln Pro
146             151             156             161

atg cct tac ttc aaa gat ttt acc ttt cct tct gat atc act gaa ttt        823
Met Pro Tyr Phe Lys Asp Phe Thr Phe Pro Ser Asp Ile Thr Glu Phe
162             167             172             177

tta gga cag cca tat ttt gaa gcc ttt aag aaa aaa atg cct ata gct        871
Leu Gly Gln Pro Tyr Phe Glu Ala Phe Lys Lys Lys Met Pro Ile Ala
178             183             188             193

ttt gca gct aaa gga ata aat aaa ttg cta aat aaa ctg ttt tta ata        919
Phe Ala Ala Lys Gly Ile Asn Lys Leu Leu Asn Lys Leu Phe Leu Ile
194             199             204             209

aat gag cag tca cca aga gcc agt gaa gaa acc ttg ctt gga att tca        967
Asn Glu Gln Ser Pro Arg Ala Ser Glu Glu Thr Leu Leu Gly Ile Ser
210             215             220             225

aaa aaa gct aaa caa atg aag atc aat gta cag aat aat gtg gat ctt       1015
Lys Lys Ala Lys Gln Met Lys Ile Asn Val Gln Asn Asn Val Asp Leu
226             231             236             241

gga cag cca gta aag aat aag aga gtc ttc aaa gaa gag tca tca gaa       1063
Gly Gln Pro Val Lys Asn Lys Arg Val Phe Lys Glu Glu Ser Ser Glu
242             247             252             257

ttt gat gtg agg gct ttc tgc aac cag ctg aaa cac aaa gct act cag       1111
Phe Asp Val Arg Ala Phe Cys Asn Gln Leu Lys His Lys Ala Thr Gln
258             263             268             273

gag acc agt ttt gat ttt aaa tgt tct caa tcc aga cta aag aca acc       1159
Glu Thr Ser Phe Asp Phe Lys Cys Ser Gln Ser Arg Leu Lys Thr Thr
274             279             284             289

aag tat tct tct cag aaa gtg ata gga act cct cat gcc aaa agt ttt       1207
Lys Tyr Ser Ser Gln Lys Val Ile Gly Thr Pro His Ala Lys Ser Phe
290             295             300             305

gtg caa aga ttc cga gag gct gag tcc ttc aca caa ctt tct gaa gaa       1255
Val Gln Arg Phe Arg Glu Ala Glu Ser Phe Thr Gln Leu Ser Glu Glu
306             311             316             321

atc cag atg gca gtt gta tgg tgc agg agc aaa aaa ctc aag gct cag       1303
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1909

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Ile Gln Met Ala Val Val Trp Cys Arg Ser Lys Lys Leu Lys Ala Gln
322                 327         332             337

gcc att ttt ctg ggt aac aaa ctt ctt aaa agc aac cgg ctt aaa cat     1351
Ala Ile Phe Leu Gly Asn Lys Leu Leu Lys Ser Asn Arg Leu Lys His
338             343             348             353

ctg gaa gct caa ggt act agt ttg cca aag aaa cta gag tgc ata aaa     1399
Leu Glu Ala Gln Gly Thr Ser Leu Pro Lys Lys Leu Glu Cys Ile Lys
354             359             364             369

acg tct att tgc aac cac ctt ctt cgt ggc tca ggt atc aaa act tca     1447
Thr Ser Ile Cys Asn His Leu Leu Arg Gly Ser Gly Ile Lys Thr Ser
370             375             380             385

aag cat cat ctg aga cag aga aga tca cag aat aaa ttt tta cgg aga     1495
Lys His His Leu Arg Gln Arg Arg Ser Gln Asn Lys Phe Leu Arg Arg
386             391             396             401

caa agg aaa cca cag aga aag ttg cag tcg act ctt tta agg gaa att     1543
Gln Arg Lys Pro Gln Arg Lys Leu Gln Ser Thr Leu Leu Arg Glu Ile
402             407             412             417

cag cag ttc tct caa ggg act cgg aag agt gct aca gat acc agt gct     1591
Gln Gln Phe Ser Gln Gly Thr Arg Lys Ser Ala Thr Asp Thr Ser Ala
418             423             428             433

aag tgg aga ctc tca cac tgt act gtg cat aga act gat ctc tac cct     1639
Lys Trp Arg Leu Ser His Cys Thr Val His Arg Thr Asp Leu Tyr Pro
434             439             444             449

aac agt aag cag ctc ttg aat agt gga gtt tca atg cct gtc ata caa     1687
Asn Ser Lys Gln Leu Leu Asn Ser Gly Val Ser Met Pro Val Ile Gln
450             455             460             465

act aag gag aaa atg att cat gaa aat ctt aga ggc atc cat gaa aat     1735
Thr Lys Glu Lys Met Ile His Glu Asn Leu Arg Gly Ile His Glu Asn
466             471             476             481

gaa act gat tcg tgg acg gtg atg caa ata aat aaa aac agt aca tca     1783
Glu Thr Asp Ser Trp Thr Val Met Gln Ile Asn Lys Asn Ser Thr Ser
482             487             492             497

gga acc att aag gag aca gat gac att gat gat att ttt gct tta atg     1831
Gly Thr Ile Lys Glu Thr Asp Asp Ile Asp Asp Ile Phe Ala Leu Met
498             503             508             513

gga gtt tag atgttcg ttcatatgtg agactttaa gtgattaaca aggctagttc     1887
Gly Val *
514

agtgttctaa gtagaactgc taagatctgg aagtaccacc tggactcaca gaggagctgc     1947

tttagtgcag cattgcacag gagttcattt cagttcagtc tacatttaaa gtagcattgt     2007

gtcatttcat caacaagtat ttcttttttg gcttcaacta catgtcaggt gttaatatga     2067
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1910

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aaaatctgcc acagcctacc cttgagaagc agatgtaatt ccttgagtga ggctagtaag   2127

tctctgaaaa actgaataat tttatgactt actaggcaat ttaataatcg tttgcaaaaa   2187

ccattgtgtc ttgaggtaaa tgaggagcgg gggtgggaga tagcaaggaa acacctgaaa   2247

ggtcaatttg gtcttattgg ctccattata cataggtccg cctctgaata ctaaagtttg   2307

tagctcctga catttatgtt ttcttgttta tatgttggaa ttgatcaaca aggtttgcca   2367

ctgcttgtat taccagggac tggttacaac cattatttct cttcatttgc ttggcttatc   2427

tcatattaaa gtgagtttgg agttctccaa aacgttttaa ttttatttat ttgggtacca   2487

gtgattgatt ccaaataaac ctttttacaa aaaggcaata aggtggttta tggttacata   2547

tgaaatataa taggataaca ggtagatgag aaagtaaaat gaaaaaatga ggttaggaga   2607

tacaaagtag acccaggaat gaggctagaa catttataat ttggtgttga tgctgtcatc   2667

tgatagggga tgttgctcgt actgttgctc tgaggggagt acatcttgag tattttcaaa   2727

taatgatgtg aagtttgagg taggtatctt tccaatgttc taactttact agaattaggt   2787

tattaagctt ctctagtgcc cttaactttt gttacataga gatttaaaga aaaagaaagt   2847

agtaccttag tatgtaccgc atccttcttt tcctcagcca ccctatcata acagaagtta   2907

tttcccttcc attctttatt tggctttgtt ctttccctgt ctgccttctc cattttctca   2967

gttatctcta ccagtggttc tcaaacttta gacttttga gaatcacctg gtgggttgct   3027

aaaagatgca gattagccct ttcccagaga ctgataaaca ggggccagaa acctgcattt   3087

ttaacatgga gcccaagtga ttttgatcca ggtggccccc aaatccagtt atataaacac   3147

tactttagct tctctcctga agccttaagt aaactggttt aattcttaat ctgtagtcag   3207

ttttcatatt cctgaattcc accacactgg actagtggat ccgagctcgg taccaagctt   3267

aagtttaaac gctagccagc ttgggtctcg caaccaaaan nngggnttc aa            3319
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1911

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gtctggcaac tctttgggag gccgacgcgg gcggaccggc gggtgctggg aaccgagcct      120

cggcttgcgg ccggcagttt ccgtgggtct gtgaagaggt cggcggcccc tgcgggcgcc      180

agtcagcttt aagaaaaagt agagatcact tctgactgta ctgaacagca aaaattaagt      240

gacttgctgc cctgcacatc     atg gca ctg cca ttc cgt aag gac tta gaa      290
                          Met Ala Leu Pro Phe Arg Lys Asp Leu Glu
                           1                   5

aag tac aaa gac ctt gat gaa gat gag ctc ctt ggg aat ctg tca gaa      338
Lys Tyr Lys Asp Leu Asp Glu Asp Glu Leu Leu Gly Asn Leu Ser Glu
 11              16                  21              26

aca gaa ctg aaa caa ctg gaa act gtt ttg gat gat ctt gac ccc gag      386
Thr Glu Leu Lys Gln Leu Glu Thr Val Leu Asp Asp Leu Asp Pro Glu
 27              32                  37              42

aat gcc ctt ctg cct gca ggg ttc cgg cag aag aac cag aca tca aag      434
Asn Ala Leu Leu Pro Ala Gly Phe Arg Gln Lys Asn Gln Thr Ser Lys
 43              48                  53              58

tcc acc aca ggg cca ttt gat aga gag cat ctc ctt tca tat ctg gag      482
Ser Thr Thr Gly Pro Phe Asp Arg Glu His Leu Leu Ser Tyr Leu Glu
 59              64                  69              74

aaa gaa gca ttg gag cat aaa gac agg gaa gac tat gtg ccc tac act      530
Lys Glu Ala Leu Glu His Lys Asp Arg Glu Asp Tyr Val Pro Tyr Thr
 75              80                  85              90

gga gaa aaa aaa ggg aaa ata ttt atc ccc aaa cag aaa cct gta cag      578
Gly Glu Lys Lys Gly Lys Ile Phe Ile Pro Lys Gln Lys Pro Val Gln
 91              96                  101             106

act ttt aca gaa gaa aaa gtg tct ctt gat cca gaa tta gaa gaa gct      626
Thr Phe Thr Glu Glu Lys Val Ser Leu Asp Pro Glu Leu Glu Glu Ala
107             112                 117             122

ttg aca agt gct tct gat aca gaa ttg tgt gac ctc gca gca att ctt      674
Leu Thr Ser Ala Ser Asp Thr Glu Leu Cys Asp Leu Ala Ala Ile Leu
123             128                 133             138

ggg atg cac aat ttg ata acg aat aca aag ttc tgt aat ata atg gga      722
Gly Met His Asn Leu Ile Thr Asn Thr Lys Phe Cys Asn Ile Met Gly
139             144                 149             154

agt agt aat ggt gtt gac caa gaa cat ttt tca aat gtg gtc aaa ggt      770
Ser Ser Asn Gly Val Asp Gln Glu His Phe Ser Asn Val Val Lys Gly
155             160                 165             170

gaa aag att ctt ccg gta ttt gat gag cca cca aat cca acc aat gta      818
Glu Lys Ile Leu Pro Val Phe Asp Glu Pro Pro Asn Pro Thr Asn Val
171             176                 181             186

gaa gag agt ttg aag aga act aaa gaa aac gat gct cat ctt gtt gaa      866
Glu Glu Ser Leu Lys Arg Thr Lys Glu Asn Asp Ala His Leu Val Glu
187             192                 197             202
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1912

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gtt aat ttg aat aat ata aag aat atc cca att cca acc cta aaa gat        914
Val Asn Leu Asn Asn Ile Lys Asn Ile Pro Ile Pro Thr Leu Lys Asp
203             208         213             218

ttt gca aag gct ttg gaa acc aac aca cat gtg aaa tgt ttc agt ctt        962
Phe Ala Lys Ala Leu Glu Thr Asn Thr His Val Lys Cys Phe Ser Leu
219             224         229             234

gca gcc acc cgg agc aat gac cct gtt gct act gct ttt gca gaa atg       1010
Ala Ala Thr Arg Ser Asn Asp Pro Val Ala Thr Ala Phe Ala Glu Met
235             240         245             250

ctg aaa gtg aac aaa act ttg aag agc tta aat gtg gag tcc aac ttt       1058
Leu Lys Val Asn Lys Thr Leu Lys Ser Leu Asn Val Glu Ser Asn Phe
251             256         261             266

atc acg gga gtt ggg att ctg gca ctg att gat gcg tta aga gat aat       1106
Ile Thr Gly Val Gly Ile Leu Ala Leu Ile Asp Ala Leu Arg Asp Asn
267             272         277             282

gaa acc ctg gca gag ctc aag att gac aat cag agg cag cag ttg ggg       1154
Glu Thr Leu Ala Glu Leu Lys Ile Asp Asn Gln Arg Gln Gln Leu Gly
283             288         293             298

aca gct gta gaa ttg gaa atg gcc aag atg ctt gag gaa aat aca aat       1202
Thr Ala Val Glu Leu Glu Met Ala Lys Met Leu Glu Glu Asn Thr Asn
299             304         309             314

atc ctt aaa ttt gga tat cag ttt aca cag cag gga cca cga acc aga       1250
Ile Leu Lys Phe Gly Tyr Gln Phe Thr Gln Gln Gly Pro Arg Thr Arg
315             320         325             330

gca gct aat gct ata aca aaa aac aat gac tta gtg cgt aag aga cga       1298
Ala Ala Asn Ala Ile Thr Lys Asn Asn Asp Leu Val Arg Lys Arg Arg
331             336         341             346

gtt gaa gga gat cac cag taa gt ctgcaaaggt gtaatctttg gaagacttca       1351
Val Glu Gly Asp His Gln  *
347             352

gaagatcacc aagggctcat gttggtgaca tcatgtaaaa ttttcctggg tagaagggaa     1411

aagactggaa aaattttttt agtgacatgc atttttttt tagttgttat caaattgtaa      1471

aatcagtaat gtgatatttt atattctgaa acatttctac tttctgctaa aatcaatttt     1531

aatttagttt aattgaatga tttatgatga atcttgggca aaaaaataca actgtaaaaa     1591

atttcacagg tcatttgtgt agaataattt gaacattgtg aggaccaatc tttttttaaat    1651

caaaagggat gttgctggta tcagaattgt tattgcttca tttagacata aaacacttaa     1711

gtgttttcct tcactccgtg acctggagag ttttccattt tttgcaagtt tagtactgcc     1771

caaatttact cattctacag tgttactgca ctttgaacgt attgacccat gtcacccaag     1831
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agaagcaaac atatggatgc actagagaca actcgggttg ctgctctcag ttaagggcta   1891

tgagttcttg gggtctaagt atctgtaaaa ttatcctctc catcagctct cactgatcat   1951

taatgtttct ggatatttct taccctaaga tttgcttacc aacaaatcaa agaaacgctt   2011

cactaattat ttttaaattg agaaaatagt attcagaggc aaagattttt atattctttt   2071

ttgagaccaa gtctcactct agcctgggca atgagagtga aaatcttatc tca   2124

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<400> 578
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gttggccgct gctgctagca cgttgaaccc cagggtcggg accg atg tcg gct tgg   116
                                                   Met Ser Ala Trp
                                                    1

gct gct gcc agc cta agc agg gcc gct gcc gaa tgc ttg ctg gca cga   164
Ala Ala Ala Ser Leu Ser Arg Ala Ala Ala Glu Cys Leu Leu Ala Arg
 5   10   15   20

ggc ccc ggg gtc agg gcg gct cct ccg cgc gac ccc cgg ccc tcc cac   212
Gly Pro Gly Val Arg Ala Ala Pro Pro Arg Asp Pro Arg Pro Ser His
 21   26   31   36

ccc gag ccc cgg ggc tgc ggt gcc gct ccg ggc agg acg ctg cac ttt   260
Pro Glu Pro Arg Gly Cys Gly Ala Ala Pro Gly Arg Thr Leu His Phe
 37   42   47   52

acc gcg gct gtc ccc gcc ggg cac aac aag tgg tcc aaa gtc agg cac   308
Thr Ala Ala Val Pro Ala Gly His Asn Lys Trp Ser Lys Val Arg His
 53   58   63   68

atc aag ggt ccg aag gac gtc gaa agg agt cgc atc ttc tcc aaa ctc   356
Ile Lys Gly Pro Lys Asp Val Glu Arg Ser Arg Ile Phe Ser Lys Leu
 69   74   79   84

tgt ttg aac atc cgc ctg gca gtg aaa gaa gga ggc ccc aac cct gag   404
Cys Leu Asn Ile Arg Leu Ala Val Lys Glu Gly Gly Pro Asn Pro Glu
 85   90   95   100

cac aac agc aac ctg gcc aat atc tta gag gtg tgt cgc agc aaa cat   452
His Asn Ser Asn Leu Ala Asn Ile Leu Glu Val Cys Arg Ser Lys His
 101   106   111   116

1914

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atg ccc aag tca acg att gag aca gca ctg aaa atg gag aaa tcc aag          500
Met Pro Lys Ser Thr Ile Glu Thr Ala Leu Lys Met Glu Lys Ser Lys
117             122             127             132

gac act tat ttg ctg tat gag ggt cga ggc cct ggt ggc tct tct ctg          548
Asp Thr Tyr Leu Leu Tyr Glu Gly Arg Gly Pro Gly Gly Ser Ser Leu
133             138             143             148

ctc atc gag gca tta tct aac agt agc cac aag tgc caa gca gac att          596
Leu Ile Glu Ala Leu Ser Asn Ser Ser His Lys Cys Gln Ala Asp Ile
149             154             159             164

aga cat atc ctg aat aag aat gga gga gtg atg gct gta gga gct cgt          644
Arg His Ile Leu Asn Lys Asn Gly Gly Val Met Ala Val Gly Ala Arg
165             170             175             180

cac tct ttt gac aaa aag ggg gtg att gtg gtt gaa gtg gag gac aga          692
His Ser Phe Asp Lys Lys Gly Val Ile Val Val Glu Val Glu Asp Arg
181             186             191             196

gag aag aag gct gtg aac cta gag cgt gcc ctg gag atg gca atc gaa          740
Glu Lys Lys Ala Val Asn Leu Glu Arg Ala Leu Glu Met Ala Ile Glu
197             202             207             212

gca gga gct gag gat gtc aag gaa act gaa gat gaa gaa gaa agg aac          788
Ala Gly Ala Glu Asp Val Lys Glu Thr Glu Asp Glu Glu Glu Arg Asn
213             218             223             228

gtt ttt aaa ttt att tgt gat gcc tct tca ctg cac caa gtg agg aag          836
Val Phe Lys Phe Ile Cys Asp Ala Ser Ser Leu His Gln Val Arg Lys
229             234             239             244

aag ctg gac tcc ctg ggc ctg tgt tct gtg tcc tgt gca cta gag ttc          884
Lys Leu Asp Ser Leu Gly Leu Cys Ser Val Ser Cys Ala Leu Glu Phe
245             250             255             260

atc ccc aac tca aag gtg cag ctg gct gag ccc gac ctg gaa cag gcc          932
Ile Pro Asn Ser Lys Val Gln Leu Ala Glu Pro Asp Leu Glu Gln Ala
261             266             271             276

gca cat ctc att cag gct ctc agc aac cac gag gat gtg att cac gtc          980
Ala His Leu Ile Gln Ala Leu Ser Asn His Glu Asp Val Ile His Val
277             282             287             292

tat gat aac att gaa taa ccaggc tacatgtgcc cccgggttcc ttcctagaaa         1034
Tyr Asp Asn Ile Glu  *
293             298

tgtggcagcc cattccagca cacaggcttc tgcagcaatc tctgagggta aagccggtgg       1094

gaggctcagc aggccaggag gcccaaggac aggacttgcg accttgaagc caaaggaatc       1154

tcacttgtgg ggcctccttg tcagctctgc tgctgtctca gagccatctg gatgagtgtc       1214

ccgacaccct ctcggatgca gggcaggacc acccagctgg tcagactctg atgttgggta       1274

gctggcctct gtggggattg taagtgccct gaggcgctct gtactagaaa ctgctcttaa       1334
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taataacggt gattattggt tgctgcaaaa aaaaaaaa   1372

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gccgactgtg tggcagctga ggaagagttt tgcacgtgga tcgccgttcg ggtgggcgag   120

atg gag aca gcc ccc aag ccg ggc aag gat gtc ccg ccc aag aaa gac   168
Met Glu Thr Ala Pro Lys Pro Gly Lys Asp Val Pro Pro Lys Lys Asp
 1   5   10   15

aaa ctt cag acc aag aga aag aaa ccg cgg cga tac tgg gag gaa gag   216
Lys Leu Gln Thr Lys Arg Lys Lys Pro Arg Arg Tyr Trp Glu Glu Glu
 17   22   27   32

acc gtt ccg acc aca gcc gga gcc tct cca ggg cct cct cgt aac aag   264
Thr Val Pro Thr Thr Ala Gly Ala Ser Pro Gly Pro Pro Arg Asn Lys
 33   38   43   48

aag aat cgg gag ctc cgt cct cag aga cca aaa aat gct tac atc tta   312
Lys Asn Arg Glu Leu Arg Pro Gln Arg Pro Lys Asn Ala Tyr Ile Leu
 49   54   59   64

aag aag tct cgg atc tct aag aag cct cag gtc ccg aag aaa ccc cga   360
Lys Lys Ser Arg Ile Ser Lys Lys Pro Gln Val Pro Lys Lys Pro Arg
 65   70   75   80

gaa tgg aag aac ccg gag tcc cag cgc ggc ttg tcc ggg gcc caa gat   408
Glu Trp Lys Asn Pro Glu Ser Gln Arg Gly Leu Ser Gly Ala Gln Asp
 81   86   91   96

cca ttc cca ggc ccc gcc ccc gtc cct gtg gaa gtg gtc cag aag ttc   456
Pro Phe Pro Gly Pro Ala Pro Val Pro Val Glu Val Val Gln Lys Phe
 97   102   107   112

tgt cgc att gac aaa tcc cga aag cta cca cat tct aaa gcc aaa act   504
Cys Arg Ile Asp Lys Ser Arg Lys Leu Pro His Ser Lys Ala Lys Thr
113   118   123   128

                              1916

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cga agc cga ctt gag gtg gct gaa gct gag gaa gag gaa aca agt atc        552
Arg Ser Arg Leu Glu Val Ala Glu Ala Glu Glu Glu Glu Thr Ser Ile
129             134             139                 144


aaa gct gct cgt tct gag ctg ctg ctt gct gaa gaa cct ggg ttt ctg        600
Lys Ala Ala Arg Ser Glu Leu Leu Leu Ala Glu Glu Pro Gly Phe Leu
145             150             155                 160


gaa ggg gag gat ggg gaa gac aca gca aag ata tgc cag gct gac att        648
Glu Gly Glu Asp Gly Glu Asp Thr Ala Lys Ile Cys Gln Ala Asp Ile
161             166             171                 176


gtg gag gct gtg gac att gca agt gca gcc aag cac ttt gac ttg aat        696
Val Glu Ala Val Asp Ile Ala Ser Ala Ala Lys His Phe Asp Leu Asn
177             182             187                 192


ctg cgg cag ttt gga ccc tac aga cta aac tac tct cga act gga aga        744
Leu Arg Gln Phe Gly Pro Tyr Arg Leu Asn Tyr Ser Arg Thr Gly Arg
193             198             203                 208


cac ctg gct ttt gga ggg cgc cga ggt cat gtg gct gcc ctt gat tgg        792
His Leu Ala Phe Gly Gly Arg Arg Gly His Val Ala Ala Leu Asp Trp
209             214             219                 224


gta aca aag aag ctt atg tgc gag atc aac gtc atg gag gcg gtg cgg        840
Val Thr Lys Lys Leu Met Cys Glu Ile Asn Val Met Glu Ala Val Arg
225             230             235                 240


gac atc cgg ttt ctc cat tct gag gca ctg ctt gct gtt gct cag aac        888
Asp Ile Arg Phe Leu His Ser Glu Ala Leu Leu Ala Val Ala Gln Asn
241             246             251                 256


cgc tgg ctc cac atc tat gac aat cag ggc att gag ctc cac tgt atc        936
Arg Trp Leu His Ile Tyr Asp Asn Gln Gly Ile Glu Leu His Cys Ile
257             262             267                 272


cgc cgc tgt gac cga gta aca cgg ctt gag ttc ctg ccc ttc cac ttc        984
Arg Arg Cys Asp Arg Val Thr Arg Leu Glu Phe Leu Pro Phe His Phe
273             278             283                 288


ctc ctg gct aca gct tca gaa aca ggg ttt cta acc tac ctg gat gtg       1032
Leu Leu Ala Thr Ala Ser Glu Thr Gly Phe Leu Thr Tyr Leu Asp Val
289             294             299                 304


tca gtg ggg aag att gtg gca gct ctg aat gct cga gct ggg cgg ctc       1080
Ser Val Gly Lys Ile Val Ala Ala Leu Asn Ala Arg Ala Gly Arg Leu
305             310             315                 320


gat gtt atg agt cag aac cct tac aat gcc gtc atc cat ctc gga cac       1128
Asp Val Met Ser Gln Asn Pro Tyr Asn Ala Val Ile His Leu Gly His
321             326             331                 336


agc aat ggt act gtg tct tta tgg agt|cca gct atg aag gag cca ctg       1176
Ser Asn Gly Thr Val Ser Leu Trp Ser Pro Ala Met Lys Glu Pro Leu
337             342             /     347                 352


gca aag att ctc tgt cat cgt ggt ggg gtc cgg gct gtg gca gta gat       1224
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Ala Lys Ile Leu Cys His Arg Gly Gly Val Arg Ala Val Ala Val Asp
353                 358             363             368


tct aca ggc acg tac atg gcc acc tct ggc cta gac cac cag ctg aag        1272
Ser Thr Gly Thr Tyr Met Ala Thr Ser Gly Leu Asp His Gln Leu Lys
369                 374             379             384


atc ttt gac ttg cga ggg acg tac cag cct ctg agc act cgg acc ctg        1320
Ile Phe Asp Leu Arg Gly Thr Tyr Gln Pro Leu Ser Thr Arg Thr Leu
385                 390             395             400


ccc cat gga gca ggg cac ctg gcc ttc tcc cag agg gga ctg ctg gtg        1368
Pro His Gly Ala Gly His Leu Ala Phe Ser Gln Arg Gly Leu Leu Val
401                 406             411             416


gcg gga atg ggt gac gtt gtc aac atc tgg gca ggg cag ggc aag gcc        1416
Ala Gly Met Gly Asp Val Val Asn Ile Trp Ala Gly Gln Gly Lys Ala
417                 422             427             432


agc cca ccc tcc ctt gaa cag ccc tac ctc acc cac cgg ctc tca ggc        1464
Ser Pro Pro Ser Leu Glu Gln Pro Tyr Leu Thr His Arg Leu Ser Gly
433                 438             443             448


cct gtg cat ggc ctt cag ttc tgc ccc ttt gaa gat gtg ctg ggg gtg        1512
Pro Val His Gly Leu Gln Phe Cys Pro Phe Glu Asp Val Leu Gly Val
449                 454             459             464


ggg cac act ggg ggc atc acc agc atg ctg gtc cct ggg gcc ggt gag        1560
Gly His Thr Gly Gly Ile Thr Ser Met Leu Val Pro Gly Ala Gly Glu
465                 470             475             480


ccc aac ttc gat ggc ctg gag agt aat cca tac aga agc cgg aag cag        1608
Pro Asn Phe Asp Gly Leu Glu Ser Asn Pro Tyr Arg Ser Arg Lys Gln
481                 486             491             496


cgc cag gag tgg gag gtg aag gcc ctg cta gag aag gta cct gca gag        1656
Arg Gln Glu Trp Glu Val Lys Ala Leu Leu Glu Lys Val Pro Ala Glu
497                 502             507             512


ctt att tgt ctg gac cca cga gcc ctg gcc gag gtg gat gtc atc tcc        1704
Leu Ile Cys Leu Asp Pro Arg Ala Leu Ala Glu Val Asp Val Ile Ser
513                 518             523             528


ctg gag cag gga aag aag gag cag ata gag agg ctg ggc tat gac ccg        1752
Leu Glu Gln Gly Lys Lys Glu Gln Ile Glu Arg Leu Gly Tyr Asp Pro
529                 534             539             544


cag gct aag gct ccc ttc cag cca aag cca aag cag aag ggc cgc agc        1800
Gln Ala Lys Ala Pro Phe Gln Pro Lys Pro Lys Gln Lys Gly Arg Ser
545                 550             555             560


tcc acg gca agc ctg gtg aag agg aag agg aag gtc atg gat gag gaa        1848
Ser Thr Ala Ser Leu Val Lys Arg Lys Arg Lys Val Met Asp Glu Glu
561                 566             571             576


cac agg gac aag gtc cgg cag agc ctt cag cag cag cat cat aag gag        1896
His Arg Asp Lys Val Arg Gln Ser Leu Gln Gln Gln His His Lys Glu
```

1918

```
gcg aag gcc aag ccc acg ggg gcc cgg cca tct gcc ctg gac aga ttt    1944
Ala Lys Ala Lys Pro Thr Gly Ala Arg Pro Ser Ala Leu Asp Arg Phe
593               598               603               608

gtg cgc tga gccagac tccagggttg cctgggaaca gtctctcccc aagatcacct    2000
Val Arg  *
609

gtagggaaat gagtgttccc tggaacaagg aggtgggggc agtgtggccc cttccccaac    2060

tgggggtgga cagctgtctc ctggggtggg ttggtattaa agaggaaagc gattttttgg    2120

aaaaaaaaaa aaaggggggg ccgtttttaa aggatccttg gggggcccca agtttacccg    2180

ggcatgcaac gtaatagttc tttccctata gggagccgaa ttat                     2224
```

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<210> 580
<211> 2083
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (121)..(1812)

<220>
<221> misc_feature
<222> (1)...(2083)
<223> n = a,t,c or g

<400> 580
aggggacggna atttgacgcc gtngatcgat cgcggtttcc cgggtcgacc cacgcgtgcg    60

gccgactgtg tggcagctga ggaagagttt tgcacgtgga tcgccgttcg ggtgggcgag    120

atg gag aca gcc ccc aag ccg ggc aag gat gtc ccg ccc aag aaa gac    168
Met Glu Thr Ala Pro Lys Pro Gly Lys Asp Val Pro Pro Lys Lys Asp
 1               5               10              15

aaa ctt cag acc aag aga aag aaa ccg cgg cga tac tgg gag gaa gag    216
Lys Leu Gln Thr Lys Arg Lys Lys Pro Arg Arg Tyr Trp Glu Glu Glu
17              22              27              32

acc gtt ccg acc aca gcc gga gcc tct cca ggg cct cct cgt aac aag    264
Thr Val Pro Thr Thr Ala Gly Ala Ser Pro Gly Pro Pro Arg Asn Lys
33              38              43              48

aag aat cgg gag ctc cgt cct cag aga cca aaa aat gct tac atc tta    312
Lys Asn Arg Glu Leu Arg Pro Gln Arg Pro Lys Asn Ala Tyr Ile Leu
 49              54              59              64

aag aag tct cgg atc tct aag aag cct cag gtc ccg aag aaa ccc cga    360
```

```
Lys Lys Ser Arg Ile Ser Lys Lys Pro Gln Val Pro Lys Lys Pro Arg
 65                     70              75              80


gaa tgg aag aac ccg gag tcc cag cgc ggc ttg tcc ggg gcc caa gat        408
Glu Trp Lys Asn Pro Glu Ser Gln Arg Gly Leu Ser Gly Ala Gln Asp
 81                     86              91              96


cca ttc cca ggc ccc gcc ccc gtc cct gtg gaa gtg gtc cag aag ttc        456
Pro Phe Pro Gly Pro Ala Pro Val Pro Val Glu Val Val Gln Lys Phe
 97                    102             107             112


tgt cgc att gac aaa tcc cga aag cta cca cat tct aaa gcc aaa act        504
Cys Arg Ile Asp Lys Ser Arg Lys Leu Pro His Ser Lys Ala Lys Thr
113                   118             123             128


cga agc cga ctt gag gtg gct gaa gct gag gaa gag gaa aca agt atc        552
Arg Ser Arg Leu Glu Val Ala Glu Ala Glu Glu Glu Thr Ser Ile
129                   134             139             144


aaa gct gct cgt tct gag ctg ctg ctt gct gaa gaa cct ggg ttt ctg        600
Lys Ala Ala Arg Ser Glu Leu Leu Leu Ala Glu Glu Pro Gly Phe Leu
145                   150             155             160


gaa ggg gag gat ggg gaa gac aca gca aag ata tgc cag gct gac att        648
Glu Gly Glu Asp Gly Glu Asp Thr Ala Lys Ile Cys Gln Ala Asp Ile
161                   166             171             176


gtg gag gct gtg gac att gca agt gca gcc aag cac ttt gac ttg aat        696
Val Glu Ala Val Asp Ile Ala Ser Ala Ala Lys His Phe Asp Leu Asn
177                   182             187             192


ctg cgg cag ttt gga ccc tac aga cta aac tac tct cga act gga aga        744
Leu Arg Gln Phe Gly Pro Tyr Arg Leu Asn Tyr Ser Arg Thr Gly Arg
193                   198             203             208


cac ctg gct ttt gga ggg cgc cga ggt cat gtg gct gcc ctt gat tgg        792
His Leu Ala Phe Gly Gly Arg Arg Gly His Val Ala Ala Leu Asp Trp
209                   214             219             224


gta aca aag aag ctt atg tgc gag atc aac gtc atg gag gcg gtg cgg        840
Val Thr Lys Lys Leu Met Cys Glu Ile Asn Val Met Glu Ala Val Arg
225                   230             235             240


gac atc cgg ttt ctc cat tct gag gca ctg ctt gct gtt gct cag aac        888
Asp Ile Arg Phe Leu His Ser Glu Ala Leu Leu Ala Val Ala Gln Asn
241                   246             251             256


cgc tgg ctc cac atc tat gac aat cag ggc att gag ctc cac tgt atc        936
Arg Trp Leu His Ile Tyr Asp Asn Gln Gly Ile Glu Leu His Cys Ile
257                   262             267             272


cgc cgc tgt gac cga gta aca cgg ctt gag ttc ctg ccc ttc cac ttc        984
Arg Arg Cys Asp Arg Val Thr Arg Leu Glu Phe Leu Pro Phe His Phe
273                   278             283             288


ctc ctg gct aca gct tca gaa aca ggg ttt cta acc tac ctg gat gtg       1032
Leu Leu Ala Thr Ala Ser Glu Thr Gly Phe Leu Thr Tyr Leu Asp Val
```

1920

```
tca gtg ggg aag att gtg gca gct ctg aat gct cga gct ggg cgg ctc        1080
Ser Val Gly Lys Ile Val Ala Ala Leu Asn Ala Arg Ala Gly Arg Leu
305                 310                 315                 320

gat gtt atg agt cag aac cct tac aat gcc gtc atc cat ctc gga cac        1128
Asp Val Met Ser Gln Asn Pro Tyr Asn Ala Val Ile His Leu Gly His
321                 326                 331                 336

agc aat ggt act gtg tct tta tgg agt cca gct atg aag gag cca ctg        1176
Ser Asn Gly Thr Val Ser Leu Trp Ser Pro Ala Met Lys Glu Pro Leu
337                 342                 347                 352

gca aag att ctc tgt cat cgt ggt ggg gtc cgg gct gtg gca gta gat        1224
Ala Lys Ile Leu Cys His Arg Gly Gly Val Arg Ala Val Ala Val Asp
353                 358                 363                 368

tct aca ggc acg tac atg gcc acc tct ggc cta gac cac cag ctg aag        1272
Ser Thr Gly Thr Tyr Met Ala Thr Ser Gly Leu Asp His Gln Leu Lys
369                 374                 379                 384

atc ttt gac ttg cga ggg acg tac cag cct ctg agc act cgg acc ctg        1320
Ile Phe Asp Leu Arg Gly Thr Tyr Gln Pro Leu Ser Thr Arg Thr Leu
385                 390                 395                 400

ccc cat gga gca ggg cac ctg gcc ttc tcc cag agg gga ctg ctg gtg        1368
Pro His Gly Ala Gly His Leu Ala Phe Ser Gln Arg Gly Leu Leu Val
401                 406                 411                 416

gcg gga atg ggt gac gtt gtc aac atc tgg gca ggg cag ggc aag gcc        1416
Ala Gly Met Gly Asp Val Val Asn Ile Trp Ala Gly Gln Gly Lys Ala
417                 422                 427                 432

agc cca ccc tcc ctt gaa cag ccc tac ctc acc cac cgg ctc tca ggc        1464
Ser Pro Pro Ser Leu Glu Gln Pro Tyr Leu Thr His Arg Leu Ser Gly
433                 438                 443                 448

cct gtg cat ggc ctt cag ttc tgc ccc ttt gaa gat gtg ctg ggg gtg        1512
Pro Val His Gly Leu Gln Phe Cys Pro Phe Glu Asp Val Leu Gly Val
449                 454                 459                 464

ggg cac act ggg ggc atc acc agc atg ctg gtc cct ggg gcc ggt gag        1560
Gly His Thr Gly Gly Ile Thr Ser Met Leu Val Pro Gly Ala Gly Glu
465                 470                 475                 480

ccc aac ttc gat ggc ctg gag agt aat cca tac aga agc cgg aag cag        1608
Pro Asn Phe Asp Gly Leu Glu Ser Asn Pro Tyr Arg Ser Arg Lys Gln
481                 486                 491                 496

cgc cag gag tgg gag gtg aag gcc ctg cta gag aag gta cct gca gag        1656
Arg Gln Glu Trp Glu Val Lys Ala Leu Leu Glu Lys Val Pro Ala Glu
497                 502                 507                 512

ctt att tgt ctg gac cca cga gcc ctg gcc gag gtg gat gtc atc tcc        1704
Leu Ile Cys Leu Asp Pro Arg Ala Leu Ala Glu Val Asp Val Ile Ser
513                 518                 523                 528
```

1921

```
ctg gag cag gga aag aag gag cag agc ctt cag cag cag cat cat aag      1752
Leu Glu Gln Gly Lys Lys Glu Gln Ser Leu Gln Gln Gln His His Lys
529             534             539             544

gag gcg aag gcc aag ccc acg ggg gcc cgg cca tct gcc ctg gac aga      1800
Glu Ala Lys Ala Lys Pro Thr Gly Ala Arg Pro Ser Ala Leu Asp Arg
545             550             555             560

ttt gtg cgc tga gcc agactccagg gttgcctggg aacagtctct ccccaagatc     1855
Phe Val Arg  *
561

acctgtaggg aaatgagtgt tccctggaac aaggaggtgg gggcagtgtg gccccttccc    1915

caactggggg tggacagctg tctcctgggg tgggttggta ttaaagagga aagcgatttt   1975

ttggaaaaaa aaaaaaaagg gggggccgtt ttaaaggatc cttggggggg cccaagttta   2035

cccgggcatg caacgtaata gttctttccc tatagggagc cgaattat                2083


    <210> 581
    <211> 1654
    <212> DNA
    <213> Homo sapiens

    <220>
    <221> CDS
    <222> (496)..(1302)

    <400> 581
gcacgaggtg acattagcat cgggcagacc cgccggacga aggggtcgcc aggttcccgt      60

ctgctttcgg aggcggatcg agcgggtgac ttttgtgcat tcgttttaat ttttggaaat    120

ctctcttttt tcctccctcg ctcgctgccg ggcatgtcct gatctggcgg ccgctcctac    180

caccctgggc agccgagcag agtggtcccc agcgggtctc cctccctgcc tccctgactt    240

tgcaacaccg cgttccggga ggaccggcct cggcgaggga ggaggcgggg gagctgcgaa    300

cacccagacc caaaccctga catgctctgg ggcggagagg aggaagccag gagctgagcg    360

cgccgcgggg gctgcttcgc cctccggctc cgagcgccgg gctccgggcg ccctgccctg    420

cgcctgggca gcagccttgc tggtcttggg ggcgcccccc gcttcccgcc ccggggggtcc   480

gcggccggca ggacc atg ctg ctg aaa gag tac cgg atc tgc atg ccg ctc      531
                  Met Leu Leu Lys Glu Tyr Arg Ile Cys Met Pro Leu
                  1               5                   10

acc gta gac gag tac aaa att gga cag ctg tac atg atc agc aaa cac      579
Thr Val Asp Glu Tyr Lys Ile Gly Gln Leu Tyr Met Ile Ser Lys His
 13              18                  23                  28
```

1922

```
agc cat gaa cag agt gac cgg gga gaa ggg gtg gag gtc gtc cag aat          627
Ser His Glu Gln Ser Asp Arg Gly Glu Gly Val Glu Val Val Gln Asn
 29              34                  39                  44

gag ccc ttt gag gac cct cac cat ggc aat ggg cag ttc acc gag aag          675
Glu Pro Phe Glu Asp Pro His His Gly Asn Gly Gln Phe Thr Glu Lys
 45              50                  55                  60

cgg gtg tat ctc aac agc aaa ctg cct agt tgg gct aga gct gtt gtc          723
Arg Val Tyr Leu Asn Ser Lys Leu Pro Ser Trp Ala Arg Ala Val Val
 61              66                  71                  76

ccc aaa ata ttt tat gtg aca gag aag gct tgg aac tat tat ccc tac          771
Pro Lys Ile Phe Tyr Val Thr Glu Lys Ala Trp Asn Tyr Tyr Pro Tyr
 77              82                  87                  92

aca att aca gaa tac aca tgt tcc ttt ctg ccg aaa ttc tcc att cat          819
Thr Ile Thr Glu Tyr Thr Cys Ser Phe Leu Pro Lys Phe Ser Ile His
 93              98                  103                 108

ata gaa acc aag tat gag gac aac aaa gga agc aat gac acc att ttc          867
Ile Glu Thr Lys Tyr Glu Asp Asn Lys Gly Ser Asn Asp Thr Ile Phe
 109             114                 119                 124

gac aat gaa gcc aaa gac gtg gag aga gaa gtt tgc ttt att gat att          915
Asp Asn Glu Ala Lys Asp Val Glu Arg Glu Val Cys Phe Ile Asp Ile
 125             130                 135                 140

gcc tgc gat gaa att cca gag cgc tac tac aaa gaa tct gag gat cct          963
Ala Cys Asp Glu Ile Pro Glu Arg Tyr Tyr Lys Glu Ser Glu Asp Pro
 141             146                 151                 156

aag cac ttc aag tca gag aag aca gga cgg gga cag ttg agg gaa ggc         1011
Lys His Phe Lys Ser Glu Lys Thr Gly Arg Gly Gln Leu Arg Glu Gly
 157             162                 167                 172

tgg aga gat agt cat cag cct atc atg tgc tcc tac aag ctg gtg act         1059
Trp Arg Asp Ser His Gln Pro Ile Met Cys Ser Tyr Lys Leu Val Thr
 173             178                 183                 188

gtg aag ttt gag gtc tgg ggg ctt cag acc aga gtg gaa caa ttt gta         1107
Val Lys Phe Glu Val Trp Gly Leu Gln Thr Arg Val Glu Gln Phe Val
 189             194                 199                 204

cac aag gtg gtc cga gac att ctg ctg att gga cat aga cag gct ttt         1155
His Lys Val Val Arg Asp Ile Leu Leu Ile Gly His Arg Gln Ala Phe
 205             210                 215                 220

gca tgg gtt gat gag tgg tat gat atg aca atg gat gat gtt cgg gaa         1203
Ala Trp Val Asp Glu Trp Tyr Asp Met Thr Met Asp Asp Val Arg Glu
 221             226                 231                 236

tac gag aaa aac atg cat gaa caa acc aac ata aaa gtt tgc aat cag         1251
Tyr Glu Lys Asn Met His Glu Gln Thr Asn Ile Lys Val Cys Asn Gln
 237             242                 247                 252
```

1923

```
cat tcc tcc cct gtg gat gac ata gag agt cat gcc caa aca agt aca      1299
His Ser Ser Pro Val Asp Asp Ile Glu Ser His Ala Gln Thr Ser Thr
253                 258             263                 268

tga caat ggatgaagtc cgagaatttg aacgagccac tcaggaagcc accaacaaga     1356
 *
269

aaatcggcat tttcccacct gcaatttcta tctccagcat ccccctgctg ccttcttccg    1416

tccgcagtgc gccttctagt gctccatcca cccctctctc cacagacgca cccgaatttc    1476

tgtccgttcc caaagatcgg ccccggaaaa agtctgcccc agaaactctc acacttccag    1536

accctgagaa aaaagccacc ctgaatttac ccggcatgca ctcttcagat aagccatgtc    1596

ggcccaaatc tgagtaactt tatataaata tctcatgggg ttttataaaa aaaaaaaa      1654



    <210> 582
    <211> 2265
    <212> DNA
    <213> Homo sapiens

    <220>
    <221> CDS
    <222> (136)..(1779)

    <400> 582
tcttttacat caagctactt cgttcttttt gcaggatccc atcgattcga attccgttgc     60

tgtcgcctac tggtactttg tatttaagat gatagtccag gtgctcaggc cactttaaag    120

attgctctaa actgt atg gtg aag ttg gcc aag ggc agg ccc cat ctt agc    171
               Met Val Lys Leu Ala Lys Gly Arg Pro His Leu Ser
                1                5                   10

cag tca gta gtt gag acc ttg ttg act caa ttg cac agt gct caa gac    219
Gln Ser Val Val Glu Thr Leu Leu Thr Gln Leu His Ser Ala Gln Asp
 13             18                  23                  28

gct gcc cgg att ttg atg tgc cat tgc ctg gca gcc att gcc atg caa    267
Ala Ala Arg Ile Leu Met Cys His Cys Leu Ala Ala Ile Ala Met Gln
 29                 34                  39                  44

ctg ccg gtg ctg ggt gat ggg atg ctt ggt gac ctc atg gag ctg tac    315
Leu Pro Val Leu Gly Asp Gly Met Leu Gly Asp Leu Met Glu Leu Tyr
 45                 50                  55                  60

aag gtg att gga cga tca gcc aca gac aag caa caa gaa ctt ctg gtg    363
Lys Val Ile Gly Arg Ser Ala Thr Asp Lys Gln Gln Glu Leu Leu Val
 61                 66                  71                  76

agt ttg gct act gtg att ttt gtt gca agt cag aag gca ttg tct gtg    411
Ser Leu Ala Thr Val Ile Phe Val Ala Ser Gln Lys Ala Leu Ser Val
```

```
gaa agt aag gca gta att aag cag cag ctt gaa agt gtc tcc aat gga        459
Glu Ser Lys Ala Val Ile Lys Gln Gln Leu Glu Ser Val Ser Asn Gly
 93              98              103             108


tgg act gta tac cgt att gcc aga cag gct tcc aga atg ggt aat cat        507
Trp Thr Val Tyr Arg Ile Ala Arg Gln Ala Ser Arg Met Gly Asn His
109             114             119             124


gac atg gcc aaa gag ctt tat cag agt ttg ctg act cag gtt gcc tca        555
Asp Met Ala Lys Glu Leu Tyr Gln Ser Leu Leu Thr Gln Val Ala Ser
125             130             135             140


gaa cat ttc tac ttc tgg cta aat agt ttg aag gag ttt tca cat gca        603
Glu His Phe Tyr Phe Trp Leu Asn Ser Leu Lys Glu Phe Ser His Ala
141             146             151             156


gaa cag tgt ctc act ggg ttg caa gag gaa aat tat agt tca gca ctt        651
Glu Gln Cys Leu Thr Gly Leu Gln Glu Glu Asn Tyr Ser Ser Ala Leu
157             162             167             172


tct tgc att gct gaa tct tta aaa ttc tat cac aaa ggg att gct tcc        699
Ser Cys Ile Ala Glu Ser Leu Lys Phe Tyr His Lys Gly Ile Ala Ser
173             178             183             188


tta aca gca gct agt aca cca ctg aat cct tta agc ttt cag tgt gaa        747
Leu Thr Ala Ala Ser Thr Pro Leu Asn Pro Leu Ser Phe Gln Cys Glu
189             194             199             204


ttt gta aaa ctc agg att gac ctt tta caa gcc ttc tct caa ctt atc        795
Phe Val Lys Leu Arg Ile Asp Leu Leu Gln Ala Phe Ser Gln Leu Ile
205             210             215             220


tgt act tgt aat agc ctg aag aca agc cca cca cct gca att gcc aca        843
Cys Thr Cys Asn Ser Leu Lys Thr Ser Pro Pro Pro Ala Ile Ala Thr
221             226             231             236


aca att gcc atg acc tta gga aat gac ctc cag agg tgt ggt cgc atc        891
Thr Ile Ala Met Thr Leu Gly Asn Asp Leu Gln Arg Cys Gly Arg Ile
237             242             247             252


tcc aat cag atg aaa cag tcc atg gaa gaa ttt cga agc ctt gct tct        939
Ser Asn Gln Met Lys Gln Ser Met Glu Glu Phe Arg Ser Leu Ala Ser
253             258             263             268


cga tat gga gat ctt tac cag gca tct ttt gat gct gac tca gca act        987
Arg Tyr Gly Asp Leu Tyr Gln Ala Ser Phe Asp Ala Asp Ser Ala Thr
269             274             279             284


ttg agg aat gtt gaa cta cag cag cag agc tgt tta ctg ata tct cat       1035
Leu Arg Asn Val Glu Leu Gln Gln Gln Ser Cys Leu Leu Ile Ser His
285             290             295             300


gca ata gaa gcc ctg att ttg gat cca gaa tca gca agt ttc cag gaa       1083
Ala Ile Glu Ala Leu Ile Leu Asp Pro Glu Ser Ala Ser Phe Gln Glu
301             306             311             316
```

```
tat gga tct act gga aca gcc cat gct gat agt gaa tat gaa aga aga        1131
Tyr Gly Ser Thr Gly Thr Ala His Ala Asp Ser Glu Tyr Glu Arg Arg
317             322             327             332

atg atg tct gta tat aat cat gtc ttg gag gag gta gaa tca ctc aat        1179
Met Met Ser Val Tyr Asn His Val Leu Glu Glu Val Glu Ser Leu Asn
333             338             343             348

cgg aaa tat acc cct gtt tct tat atg cac aca gca tgc ctc tgc aat        1227
Arg Lys Tyr Thr Pro Val Ser Tyr Met His Thr Ala Cys Leu Cys Asn
349             354             359             364

gcc atc att gct ttg ctg aaa gtt ccc ctt tct ttc cag aga tat ttt        1275
Ala Ile Ile Ala Leu Leu Lys Val Pro Leu Ser Phe Gln Arg Tyr Phe
365             370             375             380

ttc cag aaa cta cag tct acc agc atc aag ctt gct ctg tca cca tcg        1323
Phe Gln Lys Leu Gln Ser Thr Ser Ile Lys Leu Ala Leu Ser Pro Ser
381             386             391             396

ccc cgg aat cct gca gag ccc att gct gtc cag aat aac cag cag ctg        1371
Pro Arg Asn Pro Ala Glu Pro Ile Ala Val Gln Asn Asn Gln Gln Leu
397             402             407             412

gcg cta aag gta gag gga gtg gtt cag cac gga tct aaa cca gga ctc        1419
Ala Leu Lys Val Glu Gly Val Val Gln His Gly Ser Lys Pro Gly Leu
413             418             423             428

ttc cgc aaa att cag tct gtc tgt ctg aat gtt tct tcc aca ctg cag        1467
Phe Arg Lys Ile Gln Ser Val Cys Leu Asn Val Ser Ser Thr Leu Gln
429             434             439             444

agt aaa tct gga caa gac tac aag ata ccc att gac aac atg acc aat        1515
Ser Lys Ser Gly Gln Asp Tyr Lys Ile Pro Ile Asp Asn Met Thr Asn
445             450             455             460

gag atg gag caa agg gtt gaa cct cat aat gat tac ttc agt act caa        1563
Glu Met Glu Gln Arg Val Glu Pro His Asn Asp Tyr Phe Ser Thr Gln
461             466             471             476

ttt ctg ttg aac ttt gct atc ctt gga aca cac aac att aca gtg gaa        1611
Phe Leu Leu Asn Phe Ala Ile Leu Gly Thr His Asn Ile Thr Val Glu
477             482             487             492

tct tct gtg aaa gat gcc aat ggt ata gta tgg aag act ggt ccc aga        1659
Ser Ser Val Lys Asp Ala Asn Gly Ile Val Trp Lys Thr Gly Pro Arg
493             498             503             508

act acc ata ttt gta aaa tcc ctg gaa gac cct tat tcc cag caa att        1707
Thr Thr Ile Phe Val Lys Ser Leu Glu Asp Pro Tyr Ser Gln Gln Ile
509             514             519             524

cgc tta caa cag cag caa gcc cag cag cca tta cag cag cag cag caa        1755
Arg Leu Gln Gln Gln Gln Ala Gln Gln Pro Leu Gln Gln Gln Gln Gln
525             530             535             540
```

1926

```
cgc aat gcc tac aca cgg ttt taa ccatggaatg aatgcactgc agactctcaa      1809
Arg Asn Ala Tyr Thr Arg Phe  *
541                 546


gagatcaatc aaattgccag aaacagtttg gtttttcata tggaataagt attaaagtta      1869

cagtgtagtt catttattca ttgatttttg taatgtaata ttctggaaaa aattttgttt      1929

tcttaaaaat tttgtctgac agctgggcgt ggttgctcac gcctgtaatc ccagcacttt      1989

gggaggctga ggtgggcggc tcacgaggag atcaagacca tcctggctaa cacagtgaaa      2049

ccccgtctcc actaaaaaat acaaaaaaat tagccgagca tggtggcagg cgcctgtagt      2109

cccagctact tgggaggctg aggcaggaga atggtgtgaa cctgggaggc ggagcttgca      2169

gtgagccgag actgtgctcc agcctgggcg acagagcgag actccgtctc aaaaaaataa      2229

ataaatacat tttgtctgaa aaataaaaaa aaaaaa                                2265




    <210> 583
    <211> 2091
    <212> DNA
    <213> Homo sapiens

    <220>
    <221> CDS
    <222> (167)..(1606)

    <400> 583
tgtcctctct ccattgaaga ttgaacgcct gcggtaccgg tccggaattc ccgggtcgac       60

ccacgcgtcc gctggagcag agcctgccgc gaacccccgg agcccacgat ccctcgtgcc      120

atccctcgaa tccaccagca cgagcgtccc acccgcgcct gggacc   atg gcc act      175
                                                    Met Ala Thr
                                                      1

gac tca tgg gcc ctg gcg gtg gac gag cag gaa gct gcg gct gag tcg      223
Asp Ser Trp Ala Leu Ala Val Asp Glu Gln Glu Ala Ala Ala Glu Ser
  4                   9                   14                  19

ttg agc aac ttg cat ctt aag gaa gag aaa atc aaa cca gat acc aat      271
Leu Ser Asn Leu His Leu Lys Glu Glu Lys Ile Lys Pro Asp Thr Asn
 20                  25                  30                  35

ggt gct gtt gtc aag acc aat gcc aat gca gag aag aca gat gaa gaa      319
Gly Ala Val Val Lys Thr Asn Ala Asn Ala Glu Lys Thr Asp Glu Glu
 36                  41                  46                  51

gag aaa gag gac aga gct gcc cag tcc tta ctc aac aag ctg atc aga      367
Glu Lys Glu Asp Arg Ala Ala Gln Ser Leu Leu Asn Lys Leu Ile Arg
 52                  57                  62                  67
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agc aac ctt gtt gat aac aca aac caa gtg gaa gtc ctg cag cgg gat        415
Ser Asn Leu Val Asp Asn Thr Asn Gln Val Glu Val Leu Gln Arg Asp
 68              73              78                  83

cca aac tcc cct ctg tac tcg gtg aag tct ttt gaa gag ctt cgg ctg        463
Pro Asn Ser Pro Leu Tyr Ser Val Lys Ser Phe Glu Glu Leu Arg Leu
 84              89              94                  99

aaa cca cag ctt ctc caa gga gtc tat gcc atg ggt ttc aat cgt cca        511
Lys Pro Gln Leu Leu Gln Gly Val Tyr Ala Met Gly Phe Asn Arg Pro
100             105             110                 115

tcc aag ata caa gag aac gca ttg cca ctg atg ctt gct gag ccc cca        559
Ser Lys Ile Gln Glu Asn Ala Leu Pro Leu Met Leu Ala Glu Pro Pro
116             121             126                 131

cag aac tta att gcc caa tct cag tct ggt act ggt aaa aca gct gcc        607
Gln Asn Leu Ile Ala Gln Ser Gln Ser Gly Thr Gly Lys Thr Ala Ala
132             137             142                 147

ttc gtg ctg gcc atg ctt agc caa gta gaa cct gca aac aaa tac ccc        655
Phe Val Leu Ala Met Leu Ser Gln Val Glu Pro Ala Asn Lys Tyr Pro
148             153             158                 163

cag tgt cta tgt ctc tcc cca acg tat gag ctc gcc ctc caa aca gga        703
Gln Cys Leu Cys Leu Ser Pro Thr Tyr Glu Leu Ala Leu Gln Thr Gly
164             169             174                 179

aaa gtg att gaa caa atg ggc aaa ttt tac cct gaa ctg aag cta gct        751
Lys Val Ile Glu Gln Met Gly Lys Phe Tyr Pro Glu Leu Lys Leu Ala
180             185             190                 195

tat gct gtt cga ggc aat aaa ttg gaa aga ggc cag aag atc agt gag        799
Tyr Ala Val Arg Gly Asn Lys Leu Glu Arg Gly Gln Lys Ile Ser Glu
196             201             206                 211

cag att gtc att ggc acc cct ggg act gtg ctg gac tgg tgc tcc aag        847
Gln Ile Val Ile Gly Thr Pro Gly Thr Val Leu Asp Trp Cys Ser Lys
212             217             222                 227

ctc aag ttc att gat ccc aag aaa atc aag gtg ttt gtt ctg gat gag        895
Leu Lys Phe Ile Asp Pro Lys Lys Ile Lys Val Phe Val Leu Asp Glu
228             233             238                 243

gct gat gtc atg ata gcc act cag ggc cac caa gat cag agc atc cgc        943
Ala Asp Val Met Ile Ala Thr Gln Gly His Gln Asp Gln Ser Ile Arg
244             249             254                 259

atc cag agg atg ctg ccc agg aac tgc cag atg ctg ctt ttc tcc gcc        991
Ile Gln Arg Met Leu Pro Arg Asn Cys Gln Met Leu Leu Phe Ser Ala
260             265             270                 275

acc ttt gaa gac tct gtg tgg aag ttt gcc cag aaa gtg gtc cca gac       1039
Thr Phe Glu Asp Ser Val Trp Lys Phe Ala Gln Lys Val Val Pro Asp
276             281             286                 291

cca aac gtt atc aaa ctg aag cgt gag gaa gag acc ctg gac acc atc       1087
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1928

```
Pro Asn Val Ile Lys Leu Lys Arg Glu Glu Glu Thr Leu Asp Thr Ile
292             297             302             307

aag cag tac tat gtc ctg tgc agc agc aga gac gag aag ttc cag gcc      1135
Lys Gln Tyr Tyr Val Leu Cys Ser Ser Arg Asp Glu Lys Phe Gln Ala
308             313             318             323

ttg tgt aac ctc tac ggg gcc atc acc att gct caa gcc atg atc ttc      1183
Leu Cys Asn Leu Tyr Gly Ala Ile Thr Ile Ala Gln Ala Met Ile Phe
324             329             334             339

tgc cat act cgc aaa aca gct agt tgg ctg gca gca gag ctc tca aaa      1231
Cys His Thr Arg Lys Thr Ala Ser Trp Leu Ala Ala Glu Leu Ser Lys
340             345             350             355

gaa ggc cac cag gtg gct ctg ctg agt ggg gag atg atg gtg gaa cag      1279
Glu Gly His Gln Val Ala Leu Leu Ser Gly Glu Met Met Val Glu Gln
356             361             366             371

agg gct gca gtg att gag cgc ttc cga gag ggc aaa gag aag gtt ttg      1327
Arg Ala Ala Val Ile Glu Arg Phe Arg Glu Gly Lys Glu Lys Val Leu
372             377             382             387

gtg acc acc aac gtg tgt gcc cgc ggc att gat gtt gaa caa gtg tct      1375
Val Thr Thr Asn Val Cys Ala Arg Gly Ile Asp Val Glu Gln Val Ser
388             393             398             403

gtc gtc atc aac ttt gat ctt ccc gtg gac aag gac ggg aat cct gac      1423
Val Val Ile Asn Phe Asp Leu Pro Val Asp Lys Asp Gly Asn Pro Asp
404             409             414             419

aat gag acc tac ctg cac cgg atc ggg cgc acg ggc cgc ttt ggc aag      1471
Asn Glu Thr Tyr Leu His Arg Ile Gly Arg Thr Gly Arg Phe Gly Lys
420             425             430             435

agg ggc ctg gca gtg aac atg gtg gac agc aag cac agc atg aac atc      1519
Arg Gly Leu Ala Val Asn Met Val Asp Ser Lys His Ser Met Asn Ile
436             441             446             451

ctg aac aga atc cag gag cat ttt aat aag aag ata gaa aga ttg gac      1567
Leu Asn Arg Ile Gln Glu His Phe Asn Lys Lys Ile Glu Arg Leu Asp
452             457             462             467

aca gat gat ttg gac gag att gag aaa ata gcc aac tga gaagctccac      1616
Thr Asp Asp Leu Asp Glu Ile Glu Lys Ile Ala Asn  *
468             473             478

cagccactga tgccagccct ggcactgccc ctgcacagga gacaagtgcg ttcagggcac     1676

aggccccgac atcaccccaa ggacaacggc acaagtagag agaaactacc tacctcactt     1736

caaattatgt ttggacttga caaaaatgta tgcaaatgat gggggatggt agaaaaaaat     1796

tatttacaca accttggaag attaggcatg aatacacaga gatttacctt ttggaagttt     1856

catcttttaa tttggccagt gtttccttca tgctaatcta gatgctgtgg ctgattactt     1916
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1929

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gcccaggatc tcctgtggca gcctctgctt gttctctggc ttggagtgga tggggcagcc    1976

tccagctcct gtggaagtaa tggaatagtg gtggaaaggg aacacagaga gggaggcttc    2036

cagtaagata ggtgtgtaag cccagccatc atgtttggaa tggcatgagg cagca         2091


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tgctatcatt tccgcaggcc agatcagaaa agggagctca ggtaccttcc agagagtgag     180

acccagcgcc cttgtctcgc acccagtagg ctttcatccc cgcc atg gcg gag ctg     236
                                                  Met Ala Glu Leu
                                                    1

atc cag aag aag cta cag gga gaa gtg gag aaa tat caa cag cta cag     284
Ile Gln Lys Lys Leu Gln Gly Glu Val Glu Lys Tyr Gln Gln Leu Gln
  5              10                  15                  20

aag gac tta agt aaa tcc atg tcg ggg agg cag aaa ctt gaa gca caa     332
Lys Asp Leu Ser Lys Ser Met Ser Gly Arg Gln Lys Leu Glu Ala Gln
 21              26                  31                  36

cta aca gaa aat aat atc gtg aaa gag gaa ctg gcc ctg ctg gat ggg     380
Leu Thr Glu Asn Asn Ile Val Lys Glu Glu Leu Ala Leu Leu Asp Gly
 37              42                  47                  52

tcc aac gtg gtc ttt aaa ctt ctg ggt ccg gtg cta gtc aaa cag gag     428
Ser Asn Val Val Phe Lys Leu Leu Gly Pro Val Leu Val Lys Gln Glu
 53              58                  63                  68

ctg ggg gag gct cgg gcc aca gta ggg aag agg ctg gac tat atc aca     476
Leu Gly Glu Ala Arg Ala Thr Val Gly Lys Arg Leu Asp Tyr Ile Thr
 69              74                  79                  84

gct gaa att aag cga tac gaa tcc cag ctt cgg gat ctt gag cgg cag     524
Ala Glu Ile Lys Arg Tyr Glu Ser Gln Leu Arg Asp Leu Glu Arg Gln
 85              90                  95                  100

tca gag caa cag agg gag acc ctt gct cag ctg cag cag gag ttc cag     572
Ser Glu Gln Gln Arg Glu Thr Leu Ala Gln Leu Gln Gln Glu Phe Gln
101              106                 111                 116
```

1930

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cgg gcc cag gca gca aag gca ggg gct cct ggc aag gcc tga ccccatg      621
Arg Ala Gln Ala Ala Lys Ala Gly Ala Pro Gly Lys Ala  *
117                 122                 127

gtggggggag gggaggggag gggagggaat gaggcagctc taggatctat actgtagcta      681

ataaaatgta aaacacctg aaaaaaaaaa aagtcgaccg gccgcgaatt tagtagtagt      741

aggcggccgc tctagaggat ccaagcttac gtacgcgtgc atgcgacgtc atagctcttc      801

tatagtgtca cctaaattca attca                                           826
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tggaggaacg ggtcgagcca cgcgtccggc gtttcgccca ccatcttctg gggacagggt       60

ggagtccata tccgggacgg gggggaggtg gcggtgcccc tcagggctac ctctcaagag      120

tgctatcatt tccgcaggcc agatcagaaa agggagctca ggtaccttcc agagagtgag      180

acccagcgcc cttgtctcgc acccagtagg ctttcatccc cgcc atg gcg gag ctg      236
                                                 Met Ala Glu Leu
                                                  1

atc cag aag aag cta cag gga gaa gtg gag aaa tat caa cag cta cag      284
Ile Gln Lys Lys Leu Gln Gly Glu Val Glu Lys Tyr Gln Gln Leu Gln
  5              10                  15                  20

aag gac tta agt aaa tcc atg tcg ggg agg cag aaa ctt gaa gca caa      332
Lys Asp Leu Ser Lys Ser Met Ser Gly Arg Gln Lys Leu Glu Ala Gln
 21                  26                  31                  36

cta aca gaa aat aat atc gtg aaa gag gtg agg gac tgg gat ttg tgg      380
Leu Thr Glu Asn Asn Ile Val Lys Glu Val Arg Asp Trp Asp Leu Trp
 37                  42                  47                  52

ggc gag gag gga cct gta cta gcc atg gtt ctg atc aca tat gtc cca      428
Gly Glu Glu Gly Pro Val Leu Ala Met Val Leu Ile Thr Tyr Val Pro
 53                  58                  63                  68

tcc ctc cat cag gaa ctg gcc ctg ctg gat ggg tcc aac gtg gtc ttt      476
Ser Leu His Gln Glu Leu Ala Leu Leu Asp Gly Ser Asn Val Val Phe
 69                  74                  79                  84

aaa ctt ctg ggt ccg gtg cta gtc aaa cag gag ctg ggg gag gct cgg      524
Lys Leu Leu Gly Pro Val Leu Val Lys Gln Glu Leu Gly Glu Ala Arg
```

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gcc aca gta ggg aag agg ctg gac tat atc aca gct gaa att aag cga      572
Ala Thr Val Gly Lys Arg Leu Asp Tyr Ile Thr Ala Glu Ile Lys Arg
101             106             111             116

tac gaa tcc cag ctt cgg gat ctt gag cgg cag tca gag caa cag agg      620
Tyr Glu Ser Gln Leu Arg Asp Leu Glu Arg Gln Ser Glu Gln Gln Arg
117             122             127             132

gag acc ctt gct cag ctg cag cag gag ttc cag cgg gcc cag gca gca      668
Glu Thr Leu Ala Gln Leu Gln Gln Glu Phe Gln Arg Ala Gln Ala Ala
133             138             143             148

aag gca ggg gct cct ggc aag gcc tga cccca tggtgggggg aggggagggg      720
Lys Ala Gly Ala Pro Gly Lys Ala  *
149             154

aggggaggga atgaggcagc tctaggatct atactgtagc taataaaatg taaaaacacc      780

tgaaaaaaaa aaaagtcgac cggccgcgaa tttagtagta gtaggcggcc gctctagagg      840

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caattca                                                               907



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aatggaaagt tgatgacgtg ttagagagca gccaggaaaa tgaagatgac cattttnggg      180

agcttctatt ccacaacaac aaaacagtaa gtgtagaaaa tggagataga ggaagcaaaa      240

ctttcaattt gggcacagac cctgtttctt taagaaatta tccctataaa atatgtgact      300

catgtgaa atg aat ttg aaa aat att tcg ggc tta att att agt aaa aag      350
        Met Asn Leu Lys Asn Ile Ser Gly Leu Ile Ile Ser Lys Lys
         1               5                   10

aac tgt tcc aga aag aag cct gat gag ttt aat gta tgt gag aaa ttg      398
Asn Cys Ser Arg Lys Lys Pro Asp Glu Phe Asn Val Cys Glu Lys Leu
 15              20              25              30
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```
ctc ctt gat att agg cat gag aaa atc cct att gga gag aag tct tat     446
Leu Leu Asp Ile Arg His Glu Lys Ile Pro Ile Gly Glu Lys Ser Tyr
 31              36              41              46

aaa tat gat caa aaa agg aat gcc att aat tat cac cag gat ctc agt     494
Lys Tyr Asp Gln Lys Arg Asn Ala Ile Asn Tyr His Gln Asp Leu Ser
 47              52              57              62

cag cca agt ttt ggc caa tct ttt gag tat agt aaa aat gga caa ggc     542
Gln Pro Ser Phe Gly Gln Ser Phe Glu Tyr Ser Lys Asn Gly Gln Gly
 63              68              73              78

ttc cat gat gag gca gca ttt ttt aca aat aag aga tct cag ata gga     590
Phe His Asp Glu Ala Ala Phe Phe Thr Asn Lys Arg Ser Gln Ile Gly
 79              84              89              94

gag aca gtc tgt aaa tat aac gaa tgt gga aga acc ttc att gaa agt     638
Glu Thr Val Cys Lys Tyr Asn Glu Cys Gly Arg Thr Phe Ile Glu Ser
 95              100             105             110

tta aag ctg aat ata tct caa aga cct cat ttg gaa atg gag ccg tat     686
Leu Lys Leu Asn Ile Ser Gln Arg Pro His Leu Glu Met Glu Pro Tyr
111             116             121             126

gga tgc agt att tgc ggg aag tcc ttc tgc atg aat tta agg ttt gga     734
Gly Cys Ser Ile Cys Gly Lys Ser Phe Cys Met Asn Leu Arg Phe Gly
127             132             137             142

cat cag aga gct ctt aca aag gac aat cct tat gaa tat aat gaa tat     782
His Gln Arg Ala Leu Thr Lys Asp Asn Pro Tyr Glu Tyr Asn Glu Tyr
143             148             153             158

ggg gaa atc ttc tgt gac aat tca gct ttc att atc cat cag gga gct     830
Gly Glu Ile Phe Cys Asp Asn Ser Ala Phe Ile Ile His Gln Gly Ala
159             164             169             174

tac aca aga aag att ctc cgt gaa tat aaa gtg agt gac aaa acc tgg     878
Tyr Thr Arg Lys Ile Leu Arg Glu Tyr Lys Val Ser Asp Lys Thr Trp
175             180             185             190

gaa aag tca gct ctc tta aaa cat caa ata gta cac atg ggg gga aag     926
Glu Lys Ser Ala Leu Leu Lys His Gln Ile Val His Met Gly Gly Lys
191             196             201             206

tct tat gat tac aat gaa aat ggg agt aat ttc agc aag aag tca cat     974
Ser Tyr Asp Tyr Asn Glu Asn Gly Ser Asn Phe Ser Lys Lys Ser His
207             212             217             222

ctt acc cag ctt cgg aga gct cac aca gga gaa aaa acc ttt gaa tgt    1022
Leu Thr Gln Leu Arg Arg Ala His Thr Gly Glu Lys Thr Phe Glu Cys
223             228             233             238

ggt gaa tgt ggg aaa acc ttc tgg gag aag tca aac ctc act caa cat    1070
Gly Glu Cys Gly Lys Thr Phe Trp Glu Lys Ser Asn Leu Thr Gln His
239             244             249             254

cag aga aca cac aca gga gag aag ccc tat gaa tgt act gaa tgt ggg    1118
```

1933

```
          Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Glu Cys Thr Glu Cys Gly
          255             260             265             270


          aaa gcc ttt tgc cag aaa cca cac ctg acc aac cat cag cga aca cat      1166
          Lys Ala Phe Cys Gln Lys Pro His Leu Thr Asn His Gln Arg Thr His
          271             276             281             286


          aca gga gaa aaa ccc tat gaa tgt aag caa tgt gga aaa aca ttc tgc      1214
          Thr Gly Glu Lys Pro Tyr Glu Cys Lys Gln Cys Gly Lys Thr Phe Cys
          287             292             297             302


          gtg aag tca aac ctc act gaa cat cag aga aca cac aca ggg gag aag      1262
          Val Lys Ser Asn Leu Thr Glu His Gln Arg Thr His Thr Gly Glu Lys
          303             308             313             318


          ccc tat gaa tgt aat gca tgt ggg aaa tcc ttc tgc cac aga tca gcc      1310
          Pro Tyr Glu Cys Asn Ala Cys Gly Lys Ser Phe Cys His Arg Ser Ala
          319             324             329             334


          ctc act gtg cat cag aga aca cac aca ggg gag aaa ccg ttt ata tgt      1358
          Leu Thr Val His Gln Arg Thr His Thr Gly Glu Lys Pro Phe Ile Cys
          335             340             345             350


          aat gaa tgt gga aaa tcc ttc tgt gtg aag tca aac ctc att gta cat      1406
          Asn Glu Cys Gly Lys Ser Phe Cys Val Lys Ser Asn Leu Ile Val His
          351             356             361             366


          caa aga act cac act ggg gag aaa cca tat aag tgt aat gaa tgt ggg      1454
          Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Asn Glu Cys Gly
          367             372             377             382


          aaa acc ttc tgt gaa aaa tca gct ctc act aaa cat cag agg act cac      1502
          Lys Thr Phe Cys Glu Lys Ser Ala Leu Thr Lys His Gln Arg Thr His
          383             388             393             398


          aca ggg gag aag ccg tat gag tgt aat gca tgt ggg aag acc ttt agt      1550
          Thr Gly Glu Lys Pro Tyr Glu Cys Asn Ala Cys Gly Lys Thr Phe Ser
          399             404             409             414


          cag agg tca gtg ctc acc aaa cat cag aga att cac aca agg gtg aaa      1598
          Gln Arg Ser Val Leu Thr Lys His Gln Arg Ile His Thr Arg Val Lys
          415             420             425             430


          gct ctt tca aca tcc tga atgtta gaagccttca tacacttgtg aaattggtta     1652
          Ala Leu Ser Thr Ser  *
          431             436


          tacagtttca aaaaggaga tcagagaaag ccaaagaatg tcagaaattt gtagaaaatg    1712


          acttcttgtt tgaatatgta aaagctttca agaaaaatta aaacttttca ttagaaaatt    1772


          tgtactgagg ggaattctat tcatctaagt aatatggtga aaatatttat ctggaattta    1832


          tgttgtttag tgttatattc cagacgtgat accaaaattt tgttgcaaat ataatggaca    1892


          atatttattt ataccatat tcacagtgga atctgaagct tataaaagtt gaatgacagc     1952




                                      1934
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agcattaaac atatatgtga agagtccccg atgtttgtag accttatgtg agtatgcaaa   2012

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ctgacttaaa agttctgatt gttaaatttt aaggaatttt gtgagccagt tattaaaagc   2312

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atctgtatga tgaaaatact gtataatagt gtgcactgca catctgtctc ttcccagctc   2492

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aagtccagat tagtcaaagc taatcatgga agttccattt taatgattct gttggggtga   3392

acttgggagc aatgagatgt ttgggaagta ttgtgtagta cttctgggaa agatctcctt   3452

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gtgggaaaag ccagctcaga ggtgacgttg ccgagctact ctgctctcta tacctgttct   3632

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1935

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tacttagagc tgaaggcatt ccagctgaca cagaggaata tttttctaag tgttaatgtt    3752

ctatatggta attaggggga agaattattt cttttcacaa gttaatatag ggatggctgt    3812

ttgtatcagc catggttctt tctggtggaa aacagaattc tccaactaaa aatattttaa    3872

tggcagactg attacagtgg tgtgggccag aaacaaggga cagtgaaaca cccagagact    3932

tgtatcagca ggaagccatt gccattctga gccttgaagg gcaaggaggg aaacagtgtt    3992

accagagccc agtaagaact gctgtcatga aggaggggcc accttgtaag agacatcatt    4052

actaccagaa ctgtggtgcc aaattgctgg tgtctctctt tggagaaacc aaccagatac    4112

atctgctgga gagcccaggt gggcacagag aagggtggag agagaatctg ggaagagaaa    4172

tggagaataa gcagcacagt gttattcatt tctgtaaatt cctatgtaga aggctcagtg    4232

ttagaaataa agttattcta ctagttgcaa aaaaaaaaa                           4272




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gggcc    atg gcg ctg agg gag ctc aaa gtg tgt ctg ctc ggg gat aca    107
         Met Ala Leu Arg Glu Leu Lys Val Cys Leu Leu Gly Asp Thr
          1                5                      10

ggt gta ggt aaa tcg agt att gtg tgg cgg ttt gtg gaa gac agt ttt    155
Gly Val Gly Lys Ser Ser Ile Val Trp Arg Phe Val Glu Asp Ser Phe
 15              20                  25                      30

gat cca aac atc aac cca aca ata ggg gca tct ttt atg acc aag act    203
Asp Pro Asn Ile Asn Pro Thr Ile Gly Ala Ser Phe Met Thr Lys Thr
 31              36                  41                      46

gtc cag tac caa aat gag cta cat aaa ttc cta atc tgg gat aca gct    251
Val Gln Tyr Gln Asn Glu Leu His Lys Phe Leu Ile Trp Asp Thr Ala
 47              52                  57                      62
```

1936

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gga caa gaa cga ttt cgt gcc tta gca cca atg tac tat cga ggg tcg      299
Gly Gln Glu Arg Phe Arg Ala Leu Ala Pro Met Tyr Tyr Arg Gly Ser
 63                  68                  73                  78

gct gca gct ata atc gtt tat gat atc aca aaa gaa gag aca ttt tca      347
Ala Ala Ala Ile Ile Val Tyr Asp Ile Thr Lys Glu Glu Thr Phe Ser
 79                  84                  89                  94

aca tta aag aat tgg gtg aaa gag ctt cga cag cat ggc cca cct aat      395
Thr Leu Lys Asn Trp Val Lys Glu Leu Arg Gln His Gly Pro Pro Asn
 95                 100                 105                 110

att gta gtt gcc att gca gga aat aaa tgt gat ctt atc gat gta aga      443
Ile Val Val Ala Ile Ala Gly Asn Lys Cys Asp Leu Ile Asp Val Arg
111                 116                 121                 126

gaa gtc atg gag aga gat gca aag gac tac gcc gac tct att cat gca      491
Glu Val Met Glu Arg Asp Ala Lys Asp Tyr Ala Asp Ser Ile His Ala
127                 132                 137                 142

att ttt gta gag acc agc gca aaa aac gcg ata aac ata aat gaa ctc      539
Ile Phe Val Glu Thr Ser Ala Lys Asn Ala Ile Asn Ile Asn Glu Leu
143                 148                 153                 158

ttt ata gaa att agt cga aga att cca tcc act gac gcc aac ctg cca      587
Phe Ile Glu Ile Ser Arg Arg Ile Pro Ser Thr Asp Ala Asn Leu Pro
159                 164                 169                 174

tct ggc ggt aag ggc ttc aaa ctc cga aga cag cct tca gag cca aag      635
Ser Gly Gly Lys Gly Phe Lys Leu Arg Arg Gln Pro Ser Glu Pro Lys
175                 180                 185                 190

cgg agc tgc tgc tga ccgaacctca gcctctcaga cttgatgatg aagtaggtgg     690
Arg Ser Cys Cys  *
191

tcctgaaagt taacaggagg gctggggtcc ctgccaccag ttttcaccta gccagtcttg     750

agtcttctcc gtgcaaaaag gattcacaga aatggaccag ttctgttctc caaagactgc     810

agcaatgata tttcagtctg tgaacttcta ttatgtaaag aatctctagt gtacaaaggg     870

actacatcgt tggcttttga ccttgctgaa aaggaacata taattgtatg gatggtagga     930

ttaagttgtt gagtagtttt gtaatcaaga ttttatgtaa catttgtaaa gggaaaatta     990

gcacttttgt ggttcttaag ggaaaagaaa cagaccttgt ggagattata atttccttgg    1050

tttctgttac cactgttaga gggagttgta tcatttnaca tatagtagga tagtttaagt    1110

gtagggagga caattattgt ctgaagctaa aatgggttat ttataggact gatggaaatg    1170

atttcatctc tgccatctct aaagcacttt tcattgaaca tgttagccta ggatacgtac    1230

agtaaattaa caatgatagc agcagatgcc tagctcatcc tgggttgct tctgaccttg      1290

tcatgtgtgt gccaccaaac acgttattgg ccccttttta aataagctct catgatcaag    1350
```

atggtgatgg taaagaagct gcccggaata aactgaattt catatgttct aaaatgccta 1410

gcaatggttt aaaaaggaaa aagagtggaa gtgaaaaagg tggtataaat gctgtcaatt 1470

tttttttttaa cccaagtatt ttggtgggga aaagcaagta tctattgctt agcatatgta 1530

aagttgtagt ctatatttat ggggccattg cttaaagatt ataaattatg taaatacatt 1590

aataaatttt aagtttcctt tgcccttcca aaaaaaaaaa a 1631

<210> 588
<211> 1503
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (575)..(1000)

<400> 588
ccccttgaa cgcctgtggt accggtccgg aattcccggg tcgacccacg cgtccgggca 60

accgggaccc tggcccggta tggctgaagt cagcatcgac cagtccaagc tgcctggagt 120

caaggaagta tgccgagatt ttgctgtcct ggaggaccac accctggctc acagcctgca 180

ggaacaagag attgagcatc atttggcatc gaacgttcag cggaaccgtt tggtccagca 240

tgatctccag gtggctaagc agctccaaga ggaagatctg aaagcgcagg cccagctcca 300

gaagcgctac aaagaccttg aacaacaaga ctgtgaaatt gctcaggaaa ttcaggagaa 360

gctggctatt gaggcagaga gacgacgcat tcaggagaag aaggatgagg acatagctcg 420

ccttttgcaa gaaaaggagt tacaggaaga gaaaaagaga agaaacact ttccagagtt 480

ccctgcaacc cgtgcttatg cagatagtta ctattatgaa gatggaggaa tgaagccaag 540

agtgatgaaa gaagctgtat ctactccatc acga   atg gcc cac agg gat cag 592
                                          Met Ala His Arg Asp Gln
                                          1

gaa tgg tat gat gct gaa att gcc aga aaa ctg caa gaa gaa gaa ctt 640
Glu Trp Tyr Asp Ala Glu Ile Ala Arg Lys Leu Gln Glu Glu Glu Leu
  7   12   17   22

ttg gct acc cag gtg gac atg aga gcc gct caa gta gct caa gat gaa 688
Leu Ala Thr Gln Val Asp Met Arg Ala Ala Gln Val Ala Gln Asp Glu
  23 | 28   33   38

gaa atc gct cga ctt cta atg gct gaa gaa aag aaa gct tac aaa aaa 736
Glu Ile Ala Arg Leu Leu Met Ala Glu Glu Lys Lys Ala Tyr Lys Lys
  39   44   49   54

1938

```
gcc aag gag cgg gag aaa tca tct ttg gac aaa aga aag caa gac ccc        784
Ala Lys Glu Arg Glu Lys Ser Ser Leu Asp Lys Arg Lys Gln Asp Pro
 55              60              65              70

gag tgg aag cca aaa aca gct aaa gca gca aat tca aag tca aaa gag        832
Glu Trp Lys Pro Lys Thr Ala Lys Ala Ala Asn Ser Lys Ser Lys Glu
 71              76              81              86

agt gat gaa cct cac cat tct aag aat gaa agg cca gca cgg cca cca        880
Ser Asp Glu Pro His His Ser Lys Asn Glu Arg Pro Ala Arg Pro Pro
 87              92              97              102

cca cct atc atg aca gat ggt gaa gat gcg gat tac act cat ttt aca        928
Pro Pro Ile Met Thr Asp Gly Glu Asp Ala Asp Tyr Thr His Phe Thr
103             108             113             118

aac cag cag agt tcc aca cgg cat ttc tca aaa tca gag tcc tct cat       976
Asn Gln Gln Ser Ser Thr Arg His Phe Ser Lys Ser Glu Ser Ser His
119             124             129             134

aaa ggt ttt cat tac aaa cat taa aaacctagga atctgccttg aaaatggact     1030
Lys Gly Phe His Tyr Lys His  *
135             140

cactatagca aatattactg ggtgatacag aatgaattct acacttactt tttttctcct     1090

gtgtttgcat tcctgggatt tatcctcaag tgcatttctg accataagta attttaattc     1150

atttcaaatg ttttggttat tcatgatcac ttgggcagta taagaaaatg tagcttctga     1210

atattggcca cctctatgct gcatatactt cttgggatat agtatctaag acctttgtaa     1270

actgccattt tgttaggtat ggagtttggt atctagggag taggccttat ttagcaattc     1330

aaattttatg gagatgaatg atcaaagtga aacaatgttt ggatgcaacg cagaataaaa     1390

gaatataaga aatagctttt tgttgcatta atgtatgata ttttgaagga cagagccttt     1450

gctttttgta ttctttaaga aaagcacaac cataaagtat tttaaaaaaa aaa           1503
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<210> 589
<211> 2045
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (102)..(1847)

<400> 589
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accggtccgg aattcccggg tcgacccacg cgtccgggcc tgagtgccac agccagggcc       60

tctgctctgt acacagaccg ggcaaggtcc cccaggccag g   atg tca ggc ctg         113
```

1939

```
gtg ttg ggg cag cgg gat gag cct gca ggc cac cgg ctc agc caa gag        161
Val Leu Gly Gln Arg Asp Glu Pro Ala Gly His Arg Leu Ser Gln Glu
 5                  10              15                  20

gag atc ctg ggg agc aca cgg ctg gtc agc caa ggg cta gag gcc cta        209
Glu Ile Leu Gly Ser Thr Arg Leu Val Ser Gln Gly Leu Glu Ala Leu
 21                 26              31                  36

cgc agt gaa cac cag gcc gtg ctg caa agc ctg tcc cag acc att gag        257
Arg Ser Glu His Gln Ala Val Leu Gln Ser Leu Ser Gln Thr Ile Glu
 37                 42              47                  52

tgt ctg cag cag gga ggc cat gag gaa ggg ctg gtg cat gag aag gcc        305
Cys Leu Gln Gln Gly Gly His Glu Glu Gly Leu Val His Glu Lys Ala
 53                 58              63                  68

cgg cag ctt cgc cgt tct atg gaa aac att gag ctc ggg ctg agt gag        353
Arg Gln Leu Arg Arg Ser Met Glu Asn Ile Glu Leu Gly Leu Ser Glu
 69                 74              79                  84

gcc cag gtg atg ctg gct cta gcc agc cac ctg agc aca gtg gag tcg        401
Ala Gln Val Met Leu Ala Leu Ala Ser His Leu Ser Thr Val Glu Ser
 85                 90              95                  100

gag aaa cag aag ctg cgg gct cag gtg cgg cgg cta tgc cag gag aac        449
Glu Lys Gln Lys Leu Arg Ala Gln Val Arg Arg Leu Cys Gln Glu Asn
 101                106             111                 116

cag tgg ctg cgg gat gag ctg gct ggc acc cag cag cgg cta cag cgc        497
Gln Trp Leu Arg Asp Glu Leu Ala Gly Thr Gln Gln Arg Leu Gln Arg
 117                122             127                 132

agt gaa cag gct gtg gct cag ctg gag gag gaa aag aag cac ctg gag        545
Ser Glu Gln Ala Val Ala Gln Leu Glu Glu Glu Lys Lys His Leu Glu
 133                138             143                 148

ttc ctg ggg cag ctg cgg cag tat gat gag gat gga cat acc tcg gag        593
Phe Leu Gly Gln Leu Arg Gln Tyr Asp Glu Asp Gly His Thr Ser Glu
 149                154             159                 164

gag aaa gaa ggc gat gcc acc aag gat tcc ctg gat gac ctc ttt cct        641
Glu Lys Glu Gly Asp Ala Thr Lys Asp Ser Leu Asp Asp Leu Phe Pro
 165                170             175                 180

aat gag gag gaa gag gac ccc agc aat ggc ttg tcc cgt ggt caa ggt        689
Asn Glu Glu Glu Glu Asp Pro Ser Asn Gly Leu Ser Arg Gly Gln Gly
 181                186             191                 196

gct aca gca gct cag cag ggt gga tat gag atc cca gca agg ttg cgg        737
Ala Thr Ala Ala Gln Gln Gly Gly Tyr Glu Ile Pro Ala Arg Leu Arg
 197                202             207                 212

acg ttg cac aac ctg gtg atc cag tac gca gcc caa ggt cgc tat gag        785
Thr Leu His Asn Leu Val Ile Gln Tyr Ala Ala Gln Gly Arg Tyr Glu
```

```
gtg gcc gtg cca ctc tgt aag cag gca cta gag gac ctg gag cgc aca    833
Val Ala Val Pro Leu Cys Lys Gln Ala Leu Glu Asp Leu Glu Arg Thr
229                 234                 239                 244

tca ggc cgt ggc cac cct gat gtc gcc acc atg ctc aac atc ctt gct    881
Ser Gly Arg Gly His Pro Asp Val Ala Thr Met Leu Asn Ile Leu Ala
245                 250                 255                 260

ttg gtg tat cgt gac cag aat aag tat aag gaa gct gcc cac ctg ctg    929
Leu Val Tyr Arg Asp Gln Asn Lys Tyr Lys Glu Ala Ala His Leu Leu
261                 266                 271                 276

aat gat gcc ctt agc atc cgg gag agc acc ttg gga cct gac cat cct    977
Asn Asp Ala Leu Ser Ile Arg Glu Ser Thr Leu Gly Pro Asp His Pro
277                 282                 287                 292

gct gtg gct gcc aca ctc aac aat ttg gct gtg ctc tat ggc aaa agg    1025
Ala Val Ala Ala Thr Leu Asn Asn Leu Ala Val Leu Tyr Gly Lys Arg
293                 298                 303                 308

ggc aag tac aag gag gca gag cct ctg tgc cag cgg gca ctg gag att    1073
Gly Lys Tyr Lys Glu Ala Glu Pro Leu Cys Gln Arg Ala Leu Glu Ile
309                 314                 319                 324

cga gaa aag gtc ctg ggc acg aat cat cca gat gtg gca aaa cag ctg    1121
Arg Glu Lys Val Leu Gly Thr Asn His Pro Asp Val Ala Lys Gln Leu
325                 330                 335                 340

aac aac ctg gcc ctc ttg tgc caa aac cag ggc aag tat gag gcc gtg    1169
Asn Asn Leu Ala Leu Leu Cys Gln Asn Gln Gly Lys Tyr Glu Ala Val
341                 346                 351                 356

gaa cgc tac tac cag cga gca ctg gcc atc tac gag ggg cag ctg ggg    1217
Glu Arg Tyr Tyr Gln Arg Ala Leu Ala Ile Tyr Glu Gly Gln Leu Gly
357                 362                 367                 372

ccg gac aac cct aat gta gcc cgg acc aag aac aac ctg gct tcc tgt    1265
Pro Asp Asn Pro Asn Val Ala Arg Thr Lys Asn Asn Leu Ala Ser Cys
373                 378                 383                 388

tac ctg aaa cag ggc aaa tat gct gag gct gag aca cta tac aaa gag    1313
Tyr Leu Lys Gln Gly Lys Tyr Ala Glu Ala Glu Thr Leu Tyr Lys Glu
389                 394                 399                 404

atc ctg acc cgt gcc cat gta cag gag ttt ggg tct gtg gat gat gac    1361
Ile Leu Thr Arg Ala His Val Gln Glu Phe Gly Ser Val Asp Asp Asp
405                 410                 415                 420

cac aag ccc atc tgg atg cat gca gag gag cgg gag gaa atg agc aaa    1409
His Lys Pro Ile Trp Met His Ala Glu Glu Arg Glu Glu Met Ser Lys
421                 426                 431                 436

agc cgg cac cat gag ggt ggg aca ccc tat gct gag tat gga ggc tgg    1457
Ser Arg His His Glu Gly Gly Thr Pro Tyr Ala Glu Tyr Gly Gly Trp
437                 442                 447                 452
```

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tac aag gcc tgc aaa gtg agc agc ccc aca gtg aac act act ctg aga      1505
Tyr Lys Ala Cys Lys Val Ser Ser Pro Thr Val Asn Thr Thr Leu Arg
453             458             463             468

aac ctg gga gct ctg tat agg cgc cag gga aag ctg gag gct gct gag      1553
Asn Leu Gly Ala Leu Tyr Arg Arg Gln Gly Lys Leu Glu Ala Ala Glu
469             474             479             484

acc ctg gag gaa tgt gcc ctg cgg tcc cgg aga cag ggc act gac cct      1601
Thr Leu Glu Glu Cys Ala Leu Arg Ser Arg Arg Gln Gly Thr Asp Pro
485             490             495             500

atc agc cag acg aaa gca gct gac att caa ccc ggc ccc cag gtc tgc      1649
Ile Ser Gln Thr Lys Ala Ala Asp Ile Gln Pro Gly Pro Gln Val Cys
501             506             511             516

tgg tcc ccc gtc ccc cac agc cct cac agc att ccc cat tgc tcc tgg      1697
Trp Ser Pro Val Pro His Ser Pro His Ser Ile Pro His Cys Ser Trp
517             522             527             532

ctc ttc ctc tcc cct agg tgg gac agt gaa ggg gag cag ttt aac cag      1745
Leu Phe Leu Ser Pro Arg Trp Asp Ser Glu Gly Glu Gln Phe Asn Gln
533             538             543             548

aag att gct gct gcc ctt agg gtc tca gct ccc tcc tct gga atc cct      1793
Lys Ile Ala Ala Ala Leu Arg Val Ser Ala Pro Ser Ser Gly Ile Pro
549             554             559             564

ctt agg aag gac cct cag gac acc ctc tct gca ccc tgt ggt cct cta      1841
Leu Arg Lys Asp Pro Gln Asp Thr Leu Ser Ala Pro Cys Gly Pro Leu
565             570             575             580

gag tag ctagctctga ggccccaagg tgggtacaaa gcaggtatgg ccctcagaga      1897
Glu *
581

tgcagcctgc tgctggcttt tcagtcagag ggttgggggc tggccagcca agctgccttg      1957

ccctggccgc tcttactccc tccctctgct gtctcacttc aggtccatgt atttcacttt      2017

tcttaaataa aagaatcagg taacctta                                        2045


    <210> 590
    <211> 5053
    <212> DNA
    <213> Homo sapiens

    <220>
    <221> CDS
    <222> (154)..(2409)

    <400> 590
agggaattgg acagcctggc tgacttgccg gagcggatta aaccaccata tgcaaacgga      60
```

1942

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ctttcaacat cccatcttag gtcatcttct gtagaagatg ttaaactaat tataagcgag      120

gggagaccta ccatagaagt tcgaagatgt agc atg cct tct gtc att tgt gaa      174
                                    Met Pro Ser Val Ile Cys Glu
                                     1                   5

cat acc aaa caa ttc caa aca ata tca gaa gag agc aat caa ggt agc      222
His Thr Lys Gln Phe Gln Thr Ile Ser Glu Glu Ser Asn Gln Gly Ser
 8               13                  18              23

tta tta act gtg cca gga gat act agt cct tct ccc aaa cct gag gta      270
Leu Leu Thr Val Pro Gly Asp Thr Ser Pro Ser Pro Lys Pro Glu Val
 24              29                  34                  39

ttc tca aat gtg cct gaa aga gac ctt tca aat gta tct aac ata cat      318
Phe Ser Asn Val Pro Glu Arg Asp Leu Ser Asn Val Ser Asn Ile His
 40              45                  50                  55

tcc agt ttt gca act tct cca act gga gct tca aac agc aag tat gtt      366
Ser Ser Phe Ala Thr Ser Pro Thr Gly Ala Ser Asn Ser Lys Tyr Val
 56              61                  66                  71

tca gct gat aga aat ctc atc aag aat act gcc cca gtg aac act gta      414
Ser Ala Asp Arg Asn Leu Ile Lys Asn Thr Ala Pro Val Asn Thr Val
 72              77                  82                  87

atg gac agt cca gtg cat tta gag cca tct agt cag gtt ggt gtg atc      462
Met Asp Ser Pro Val His Leu Glu Pro Ser Ser Gln Val Gly Val Ile
 88              93                  98                  103

cag aat aaa tca tgg gag atg cct gtt gat aga cta gag aca tta agc      510
Gln Asn Lys Ser Trp Glu Met Pro Val Asp Arg Leu Glu Thr Leu Ser
 104             109                 114                 119

acc aga gac ttt atc tgc cca aat tct aac ata cct gat caa gaa tcc      558
Thr Arg Asp Phe Ile Cys Pro Asn Ser Asn Ile Pro Asp Gln Glu Ser
 120             125                 130                 135

tct ctt cag agt ttt tgt aat tct gaa aat aag gta ttg aaa gaa aat      606
Ser Leu Gln Ser Phe Cys Asn Ser Glu Asn Lys Val Leu Lys Glu Asn
 136             141                 146                 151

gct gat ttt tta tcc ctg cgc cag act gaa ctg cca gga aac tct tgt      654
Ala Asp Phe Leu Ser Leu Arg Gln Thr Glu Leu Pro Gly Asn Ser Cys
 152             157                 162                 167

gct cag gat ccg gca tcc ttt atg cct cca cag cag cct tgc tct ttc      702
Ala Gln Asp Pro Ala Ser Phe Met Pro Pro Gln Gln Pro Cys Ser Phe
 168             173                 178                 183

ccc agc caa tca ctt tca gat gct gaa tcg att tct aaa cat atg tct      750
Pro Ser Gln Ser Leu Ser Asp Ala Glu Ser Ile Ser Lys His Met Ser
 184             189                 194                 199

ttg tca tat gtt gct aat caa gag cca ggt att tta caa caa aaa aat      798
Leu Ser Tyr Val Ala Asn Gln Glu Pro Gly Ile Leu Gln Gln Lys Asn
```

1943

```
gca gtt cag att att agt tct gct tta gat act gat aat gaa tct aca        846
Ala Val Gln Ile Ile Ser Ser Ala Leu Asp Thr Asp Asn Glu Ser Thr
216                 221                 226                 231

aaa gat aca gaa aat act ttt gtc cta gga gat gtt caa aaa aca gat        894
Lys Asp Thr Glu Asn Thr Phe Val Leu Gly Asp Val Gln Lys Thr Asp
232                 237                 242                 247

gcc ttt gtc cca gtg tac tct gac agc act att caa gaa gca tca cca        942
Ala Phe Val Pro Val Tyr Ser Asp Ser Thr Ile Gln Glu Ala Ser Pro
248                 253                 258                 263

aac ttt gag aaa gct tat act tta cct gtg tta cca tca gaa aag gac        990
Asn Phe Glu Lys Ala Tyr Thr Leu Pro Val Leu Pro Ser Glu Lys Asp
264                 269                 274                 279

ttt aat gga agt gat gcc tct acc cag cta aat aca cat tat gca ttt       1038
Phe Asn Gly Ser Asp Ala Ser Thr Gln Leu Asn Thr His Tyr Ala Phe
280                 285                 290                 295

agc aaa cta act tac aag tct tcc agt ggc cat gaa gtt gag aat agc       1086
Ser Lys Leu Thr Tyr Lys Ser Ser Ser Gly His Glu Val Glu Asn Ser
296                 301                 306                 311

aca act gat act cag gtc att tca cat gaa aaa gaa aac aaa ctg gag       1134
Thr Thr Asp Thr Gln Val Ile Ser His Glu Lys Glu Asn Lys Leu Glu
312                 317                 322                 327

agt ttg gtt tta act cat ttg agt agg tgt gat tct gat tta tgt gaa      1182
Ser Leu Val Leu Thr His Leu Ser Arg Cys Asp Ser Asp Leu Cys Glu
328                 333                 338                 343

atg aat gca ggg atg cca aaa gga aac cta aat gaa caa gat cca aaa      1230
Met Asn Ala Gly Met Pro Lys Gly Asn Leu Asn Glu Gln Asp Pro Lys
344                 349                 354                 359

cat tgt cct gaa agt gaa aag tgt ttg ctt tcc ata gaa gat gag gaa     1278
His Cys Pro Glu Ser Glu Lys Cys Leu Leu Ser Ile Glu Asp Glu Glu
360                 365                 370                 375

tct caa caa agc att tta tca agt ctg gaa aac cat tca cag cag tca     1326
Ser Gln Gln Ser Ile Leu Ser Ser Leu Glu Asn His Ser Gln Gln Ser
376                 381                 386                 391

act caa cca gaa atg cat aaa tat ggt cag tta gtt aaa gta gaa tta     1374
Thr Gln Pro Glu Met His Lys Tyr Gly Gln Leu Val Lys Val Glu Leu
392                 397                 402                 407

gaa gaa aat gcc gaa gat gat aaa act gaa aac caa atc cct caa aga     1422
Glu Glu Asn Ala Glu Asp Asp Lys Thr Glu Asn Gln Ile Pro Gln Arg
408                 413                 418                 423

atg act aga aac aaa gca aat aca atg gca aat caa agc aaa cag att     1470
Met Thr Arg Asn Lys Ala Asn Thr Met Ala Asn Gln Ser Lys Gln Ile
424                 429                 434                 439
```

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ctt gct agc tgt aca cta tta tca gaa aaa gac agt gaa tcc tca tct        1518
Leu Ala Ser Cys Thr Leu Leu Ser Glu Lys Asp Ser Glu Ser Ser Ser
440             445             450             455

cct aga gga aga ata aga tta act gaa gat gac gat cct caa att cac        1566
Pro Arg Gly Arg Ile Arg Leu Thr Glu Asp Asp Asp Pro Gln Ile His
456             461             466             471

cat cca cgg aaa agg aaa gtg tca cgt gta cct cag cct gtg caa gtg        1614
His Pro Arg Lys Arg Lys Val Ser Arg Val Pro Gln Pro Val Gln Val
472             477             482             487

agt ccc tct tta cta caa gca aaa gag aaa act cag caa tct ctg gca        1662
Ser Pro Ser Leu Leu Gln Ala Lys Glu Lys Thr Gln Gln Ser Leu Ala
488             493             498             503

gcc att gta gat tct cta aaa cta gat gag att cag cca tac agt tca        1710
Ala Ile Val Asp Ser Leu Lys Leu Asp Glu Ile Gln Pro Tyr Ser Ser
504             509             514             519

gag aga gca aat cca tat ttt gaa tac ttg cac ata agg aaa aaa ata        1758
Glu Arg Ala Asn Pro Tyr Phe Glu Tyr Leu His Ile Arg Lys Lys Ile
520             525             530             535

gaa gaa aaa cgc aaa tta ctg tgt agt gtg att cct caa gca cct cag        1806
Glu Glu Lys Arg Lys Leu Leu Cys Ser Val Ile Pro Gln Ala Pro Gln
536             541             546             551

tac tat gac gaa tat gta aca ttt aac gga tca tat ctc ctg gat gga        1854
Tyr Tyr Asp Glu Tyr Val Thr Phe Asn Gly Ser Tyr Leu Leu Asp Gly
552             557             562             567

aac ccc tta agc aag att tgt att ccc aca att aca cca cca cct tca        1902
Asn Pro Leu Ser Lys Ile Cys Ile Pro Thr Ile Thr Pro Pro Pro Ser
568             573             578             583

ctg tca gat cca ctt aaa gag ctt ttt cga caa cag gaa gtt gta agg        1950
Leu Ser Asp Pro Leu Lys Glu Leu Phe Arg Gln Gln Glu Val Val Arg
584             589             594             599

atg aaa cta cgt ttg caa cac agt att gaa agg gaa aaa ctc att gta        1998
Met Lys Leu Arg Leu Gln His Ser Ile Glu Arg Glu Lys Leu Ile Val
600             605             610             615

tcc aac gaa caa gaa gtt ttg cga gtt cat tac aga gct gca aga aca        2046
Ser Asn Glu Gln Glu Val Leu Arg Val His Tyr Arg Ala Ala Arg Thr
616             621             626             631

ttg gca aat caa aca ctg cca ttt agt gct tgt act gtt ttg ctg gat        2094
Leu Ala Asn Gln Thr Leu Pro Phe Ser Ala Cys Thr Val Leu Leu Asp
632             637             642             647

gcc gaa gta tac aat gta cca ttg gac tct cag tct gat gac agt aaa        2142
Ala Glu Val Tyr Asn Val Pro Leu Asp Ser Gln Ser Asp Asp Ser Lys
648             653             658             663
```

1945

```
act tct gtg agg gat cgc ttt aat gca aga caa ttc atg tct tgg tta      2190
Thr Ser Val Arg Asp Arg Phe Asn Ala Arg Gln Phe Met Ser Trp Leu
664             669             674             669... 
```

act tct gtg agg gat cgc ttt aat gca aga caa ttc atg tct tgg tta   2190
Thr Ser Val Arg Asp Arg Phe Asn Ala Arg Gln Phe Met Ser Trp Leu
664   669   674   679

caa gat gtg gat gat aaa ttt gac aaa tta aag acc tgt ctt tta atg   2238
Gln Asp Val Asp Asp Lys Phe Asp Lys Leu Lys Thr Cys Leu Leu Met
680   685   690   695

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Ser Ile Tyr Glu Ile Gln Glu Phe Tyr Val Pro Leu Val Asp Val Asn
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Asp Asp Phe Glu Leu Thr Pro Ile *
744   749

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Pro Glu Ile His Met Thr Gly Pro Met Cys Leu Ile Glu Asn Thr Asn
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Thr Gln Pro Val Val Val Val Ala Ile Val Gly Leu Tyr Arg Thr Gly
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Leu Gly Ser Thr Val Gln Ser His Thr Lys Gly Ile Trp Met Trp Cys
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Val Pro His Pro Lys Lys Pro Gly His Ile Leu Val Leu Leu Asp Thr
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1948